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THE RESPONSIBILITY OF THE PATHOLOGIST *

H. R. WAHL, M.D.
KANSAS CITY, KAN.

The chief responsibility of the pathologist is the cultivation and stimulation of the true spirit of science, not only in his own department but throughout the hospital. He should use every means in his power to encourage in his colleagues and in the interns the habit of keen, thoughtful analysis of facts. He should show by his own example the intense passion for facts, the cautiousness of statement, the clearness of vision and the sense of the interrelatedness of things that make up the essential characteristics of the scientific mood. There is no member of the staff who is in a more strategic position to illustrate the scientific method by making certain of the facts, by precision of statement, by getting things clear and by recognizing the complexity of all problems or situations. These facts are by no means always material in nature. Those of a psychic character involving the mental reaction of the patients are often fully as important and significant in the interpretation of the patient's condition as such material data as blood pressure, blood chemistry and blood counts. True science embraces all facts of every type that bear on the matter in question. It is true that most of the things which concern a pathologist are of a very material and concrete character, yet he must remember that these afford only a part of the total picture of the sick patient and that, before he can scientifically sift, analyze and cogitate on their significance, he must cooperate with the clinician and give due consideration to those facts that are clinical and often peculiarly intangible in character.

Consequently, it is essential to the success of his department that the pathologist should secure the complete cooperation of his clinical colleagues. He should carefully avoid any appearance of being a critic of their work. On the contrary, he should make them feel that he is anxious to be of service to them and can give them valuable assistance in their clinical problems. The attitude of fault finding and of seeking errors to expose the weaknesses of the clinicians' work is most demoralizing to a hospital group. This invites the antagonism of the clinical men and renders the pathologist's work increasingly difficult because of his failure to get all of the important clinical data. Errors in diagnosis, whether of a laboratory or of a clinical nature, should always be sought, but the emphasis should always be placed on the causes of these errors in order to avoid their repetition. On the other hand, if the pathologist has the cooperation and confidence of the clinician there will be a much better understanding of the limitations of laboratory procedures.

The closest coordination of the laboratory and the clinic cannot be obtained without the pathologist insisting on his right to be regarded as a specialist and to be called in consultation with the clinician and advise laboratory procedures just as the urologist or the surgeon may be called in. He should resent being looked on as a deified technician who automatically did what the clinical men ordered regardless of his own opinion as to their indication. It is the pathologist's responsibility to secure this respect from the clinician. He should keep the clinicians informed of the latest advances in anatomy, physiology, chemistry and physics and show their application to clinical conditions.

The very basis of the scientific treatment of disease in the modern hospital implies the presence of a thoroughly scientific laboratory man who insures the use of the scientific method not only in connection with the disease but also, and even more important, in the treatment of the patient. In his laboratory, where the pathologist has many methods and appliances for detecting the material facts of disease, he has a wonderful opportunity to stimulate the use of the scientific method. It is here that important data are obtained and the final results of the postmortem room collected, correlated with the clinical observations, sifted, realined and interpreted. These may result in the prevention of mistakes in new patients and in this way enlarge the education of the staff and increase the efficiency of the hospital. It is here that the pathologist has an excellent opportunity to develop the scientific mood in the young intern. It is here that the discussions at the staff meeting should receive their source and inspiration.

The modern hospital is not only a reparative institution; it also has an educational function to perform. The pathologist should bear an important rôle in both these functions, but his value is especially of importance in the educational field. The instruction of the interns is complete only so far as the pathologist directs and assists them in the analysis of their cases. A staff meeting without the thorough study of the cases for discussion by the pathologist would soon become uninteresting, uninstructive and useless. Frequently, the life of a staff meeting centers about the observations in the autopsy room and their interpretation by the pathologist. A mere enumeration of errors in diagnosis without their explanation would soon make such a meeting unscientific and meaningless. A staff meeting properly conducted should have the greatest educational influence on the entire staff. It is the pathologist who often makes or ruins the success of a staff meeting. It is true that occasionally a keen clinician may supplant

* Chairman's address, read before the Section on Pathology and Physiology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

the absence of the scientific attitude in the pathologist. It must not be forgotten that the laboratory man does not have a monopoly of the use of the scientific method. He has a better opportunity, but frequently the clinician is better than he and uses this method successfully in his study of his patients.

The pathologist should represent the investigative spirit of the hospital. All its research activities should emanate from his department. In fact, he should be the moving spirit behind the research problems of the institution. New problems naturally suggest themselves constantly in the study of patients. Often the keen eye of a capable clinician results in a most important observation which the pathologist should encourage to the extent of affording the clinician every facility to work out his ideas scientifically. He should place a premium on the observant habit, the alert mind and the honestly inquisitive spirit.

The recent efforts of the College of Surgeons and other agencies to elevate the standards of hospitals can succeed only with the cooperation of the pathologist. It is his responsibility to make this program a success. The three outstanding requirements of all class A hospitals, regular staff meetings, examinations of tissues removed in the operating room, and a minimum of from 10 to 15 per cent of postmortem examination of all deaths, all require the services of a competent pathologist. There is no doubt that competent pathologists are cognizant of this responsibility and are responding to it nobly. There are, however, many more hospitals than there are good pathologists. This comprises the weakness of this program. The dearth of good men is becoming critical in many localities. There is the temptation of many inadequately prepared men to assume these duties, often to the disgust of the clinical men. Such incompetent men are doomed to make grievous errors, often to the discredit of pathologists in general. One can readily sympathize with the experienced surgeon's objection to having his operative material poorly examined and his reputation questioned because of an adverse report by an incompetent pathologist.

It is the duty of recognized pathologists to take measures to prevent their specialty from being recruited and jeopardized by many inadequately prepared laboratory workers. Such persons not only cast discredit on pathologists but endanger the lives of patients and jeopardize the entire modern program of elevating the standards of hospital work. Such a man cannot be expected to stimulate the interns to secure a large number of permissions for autopsies. An inadequately performed autopsy will rapidly cool the ardor of the most enthusiastic intern. An autopsy poorly done is often worse than none at all.

There are a number of problems which every pathologist has to a greater or less extent and often require rare diplomacy and keen judgment in their disposition. One of these is the unreasonable demands that are frequently made on the laboratory by a well meaning, enthusiastic, but poorly informed clinician. It is the duty of the pathologist to limit such requests. In fact, he should be expected to advise laboratory procedures and no clinician should resent his suggestion. It is here that he should be called in consultation, that the limitations and indications for certain laboratory procedures can be discussed and then ordered. It is important, however, that he does not discourage the honest efforts of the clinical man's attempt to get all possible data bearing on a case.

A constant problem of the pathologist is in his own department. This is the natural conflict between so-called business efficiency and scientific accuracy. It is often difficult to make the hospital administration realize the intrinsic incompatibility between efficiency in the business sense and thorough, reliable and scientific accuracy. It often requires considerable judgment and even courage to know how long to examine a specimen for a suspected organism. In doing this the pathologist must be naturally honest with himself and conscientious in his efforts, always keeping the patient's welfare uppermost in mind and permitting no outside or personal consideration to influence his judgment.

The pathologist is often urged to make rapid and "efficient" reports even at the expense of scientific accuracy and thoroughness. He should resist such pressure and make no report until he is satisfied that adequate work has been done to justify a report.

The problem of adequate records is often of some concern. It is needless to emphasize that, regardless of the drudgery involved, thorough and complete records are indispensable for scientific work. Slovenly records reflect similar habits of thought. It is the duty of the pathologist to insist on simple and accurate records of everything done in his department and, in fact, everything on the patient.

The tendency of some clinicians to compel the laboratory to make their diagnosis presents a problem for the pathologist that often requires great tact to adjust. He should avoid diagnoses on laboratory observations alone and use every opportunity to show how this procedure is unjust to the laboratory method and unsafe to the patient. It is only in this way that he can teach the clinician the proper evaluation of laboratory work.

Another embarrassing situation for the pathologist at times is the request of a clinician for elaborate facilities and help to carry out some research problem. Such men often have no conception of how much work is really involved. Frequently they start with great enthusiasm but their ardor soon dampens, following a few small difficulties, and the further work is then indefinitely postponed. It should be the pathologist's duty to temper the plans of such men; yet, at the same time, he should be careful of discouraging some enterprising member who has a real problem that is well worth development.

One of the most difficult problems is the development of an adequate postmortem service. It is well recognized that one of the best criteria of the professional efficiency of a hospital is the percentage of autopsies obtained. This depends largely on the energy and initiative of the pathologist and the cooperation he can secure from the clinical group. Besides stimulating the interns to work for postmortems, there are some other considerations that will raise the percentage. One of these is the development of more cooperation with the undertakers by exposing main arteries for them, avoiding unnecessary destruction of the blood supply and furnishing embalming facilities for them. Another factor that would aid in securing permits is the development of a certain dignified procedure in the performance of an autopsy in order to avoid offending even those intimately interested in the body. Indignities and careless handling and exposure of the corpse should not be permitted. Where possible, the performance of an autopsy at the convenience of the clinical men will interest them more in using every effort to get more such examinations. The changes can be explained, the case discussed right there, and the clinician made

to feel that it was well worth his while to attend the postmortem examination. This coordination of the activity of the clinical man and the pathologist is largely the secret of an efficient institution.

In fact, it should be emphasized that the pathologist represents the liaison between the clinician and the basic scientist, whose work represents the foundation on which modern scientific medicine is based. The pathologist also becomes a useful check on the professional efficiency of the hospital. He should represent the incarnation of the investigative spirit of his organization. He should provide the inspiration for the staff meetings, play the vital rôle in the standardization of hospitals, and be the leader in the progress of medical science in his organization.

Bell Memorial Hospital.

OTOLARYNGOLOGY IN THE GENERAL HOSPITAL INTERNSHIP*

AUSTIN A. HAYDEN, M.D.
CHICAGO

Otolaryngology in this paper is used as a vehicle for the conveyance of some thoughts about internships that have occurred to me in my experience as attending otolaryngologist and chairman of the intern committee in a 200 bed general hospital [1] of the "closed-open" type and not closely attached to a medical college. Any other specialty might have served the purpose equally well. This type of institution was selected because, according to the best information obtainable, it represents the average approved hospital where the majority of interns serve.

Pennsylvania in 1914 was the first state to make hospital internship an essential for medical licensure. Since then twelve states [2] and one territory in all have enacted similar legislation. In the same period eleven medical colleges have made this a requirement for their degree of doctor of medicine. The most astonishing result of the foregoing is that, while only twelve of the forty-nine states and eleven [3] of our eighty colleges have this far adopted these regulations, fully 90 per cent of those completing the fourth year of medicine in 1927 sought fifth year training. No greater tribute could have been paid to the clear foresight and sound judgment of the Council on Medical Education and Hospitals of the American Medical Association and to the teachers of medicine throughout the entire United States than this eagerness with which the medical student himself assumed an added year's burden. The absolute unselfishness of his ideals needs no better testimonial.

In the accompanying chart an attempt has been made to show the relationship the fifth year bears to general and medical education, hospitals, medical practice and the general public. A new national school of medicine has slowly but surely come into existence in the last fourteen years. Its required course of study is only one year, but there is ample opportunity for subsequent instruction if further training is desired. Its students last year numbered 4,400, with accommodations for at least 10 per cent more without overcrowding. Its faculty is quite distinct and largely apart from that of the medical colleges and is almost wholly unorganized. It is composed of the practicing physicians who man the departments into which the medical practice is divided in the approved hospitals. Its method of teaching resembles that of the old preceptorship adapted to present-day hospital practice. Its teaching plant is scattered over the length and breadth of the nation. To it the American public pays hundreds of millions annually and has already invested more than three billion dollars in land, buildings and equipment.

My belief is that the fifth or hospital year is the most important of the entire medical course and deserves a constructive, comprehensive and well correlated plan of instruction and training. This must be entirely different from the postgraduate curriculum to which Shambaugh, Mosher, Chevalier Jackson, Coates, Pusey and others have devoted so much consideration with such gratifying results. The object of this paper is to stimulate interest and initiate activity in this direction. To that end, the following suggestions are presented for consideration.

To begin with, otolaryngology should endeavor to interest the intern in medical organization. The hospital clinical conferences, which the fifth year student should be required to attend, will usually furnish his first actual opportunity to participate personally in a medical meeting. Here he may present and discuss clinical material under the direction of the chief of the service. Attendance at local, general and special—and when accessible district, state and national—medical society meetings should be encouraged in every way possible. The value of local, state, national and special medical journals and the advisability of individual subscription to certain of these at the beginning of the internship cannot be too strongly emphasized as the best means of laying the foundation for a personal medical library that will be of inestimable usefulness in the years to come. Due regard for the rights of other physicians, of patients and of the public in general should be taught by practical application to concrete cases of the code of ethics of the American Medical Association. Interest should be stimulated in sound medical economics. The composition and organization of the American Medical Association should be fully explained in an adequate presentation of its constitution and by-laws. If these things are done it will not be necessary to urge the physician to join up with organized medicine on leaving the hospital. He will do so voluntarily.

What of otolaryngology can be given the intern during the six and one-half weeks' service, not even all of which is devoted to this one subject? Obviously, comprehensive instruction and adequate training are impossible. Indeed, on the theory that a little knowledge is a dangerous thing, serious question has often arisen as to the advisability of presenting anything other than a most cursory view of the subject. That the present fifth year in general hospitals tends to produce the all around specialist type of general practitioner—good at everything but not properly qualified for anything and with no realization of his own limitations but ready and anxious to crash into any situation, however difficult—is all too true. But otolaryngology was included in his medical college course and today

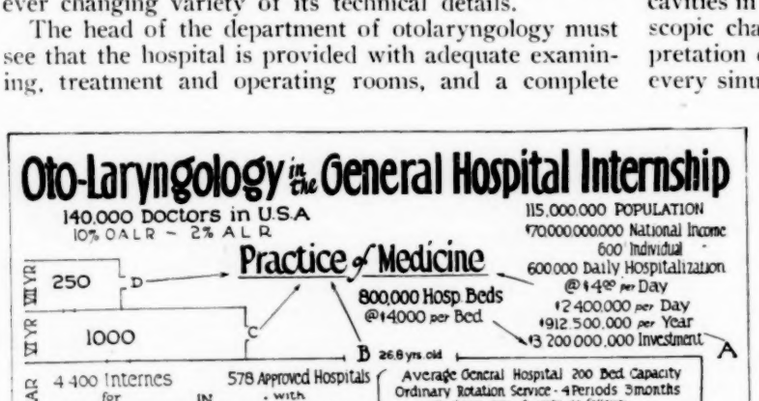
---

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

1. St. Joseph's Hospital, 2100 Burling Street, Chicago.
2. New Jersey, 1916; Alaska and Rhode Island, 1917; North Dakota, 1918; Washington, 1919; Michigan, 1922; Illinois, 1923; Delaware and Iowa, 1924; South Dakota, 1925; Texas, 1926, and Wisconsin, 1927.
3. University of Minnesota Medical School, Stanford University School of Medicine, Rush Medical College (University of Chicago), University of California Medical School, Marquette University School of Medicine, Northwestern University Medical School, University of Illinois College of Medicine, Loyola University School of Medicine, Detroit College of Medicine and Surgery, University of Cincinnati College of Medicine and College of Medical Evangelists.

forms a large part of the work of every general hospital. For these two reasons at least the intern has a right to training in this department and the specialty should prepare to furnish it, with as much care as was given to preparation of the undergraduate curriculum. This plan should be sufficiently elastic to meet quite readily the particular needs of any approved general hospital, as well as the personal requirements of the individual intern. The work should be so presented that those who wish to specialize will be inspired to enter the specialty of their choice by the precept and example of their attending men, while the others will go into general practice with the feeling that the development of modern medicine has been so great that an individual brain cannot envisage the entirety of its scope and no single pair of hands can master the endless and ever changing variety of its technical details.

The head of the department of otolaryngology must see that the hospital is provided with adequate examining, treatment and operating rooms, and a complete



In 1927, 450,000 were registered in the high schools and 70,000 in the colleges of the United States. Eighty medical colleges with courses of from thirty-three to thirty-nine weeks a year had 5,000, more or less, enrolled in each of the four years of medicine. Slightly less than 5,000 graduated to enter the practice of medicine through four gateways: *A*, less than 10 per cent without fifth year training entered the practice of medicine in the thirty-seven states that do not require the fifth year for licensure; *B*, more than 90 per cent, 4,400, sought fifth year training, 75 per cent of whom entered the practice of medicine through gate B when 26.8 years old; *C*, 25 per cent, or about 1,000 of the 4,400 who took fifth year training, took subsequent hospital work; *D*, 25 per cent of the 1,000 who took sixth year training took another or seventh year before actually starting to practice medicine. Of the 140,000 physicians in the United States, somewhat less than 10 per cent specialize in diseases of the eye, ear, nose and throat, and probably less than 2 per cent in otolaryngology exclusively. The importance of the hospital as a national institution is shown by the number of beds and the amount of money that the public spends and has invested in this gigantic work. The "average general hospital" approved for intern training is one of 200 beds with the "rotation plan of service" arranged somewhat as outlined above, six and one-half weeks being allowed to service. It is estimated that fully 75 per cent of the fifth year students selected this type of institution.

equipment of the instruments and apparatus necessary for efficient work in his department. By his own example, he should teach the intern the value of early and frequent consultation with other departments, as well as with other otolaryngologists. He should set aside sufficient time to review the case histories, physical examinations and progress notes that the intern has written. Practical anatomy and applied physiology should be presented as a routine and correlated with the pathology of each individual case. In no other way can the student's interest in the subject be successfully stimulated. The intern should early be impressed with the fact that he is quite apt to receive from his fifth year only what he himself puts into it and that willing, cheerful service rendered to patients, attending men and hospital attachés seldom goes unrewarded. The intern's personal equipment for otolaryngology need be simple in the extreme, as he always has access to that of the hospital. A general textbook, covering the entire subject, and a head mirror will suffice, provided he thoroughly familiarizes himself with the contents of the former and the use of the latter.

He must always remember that he is a doctor of medicine, specializing in diseases of the nose, throat and ear. He must be taught always to compile his case histories carefully around the outstanding otolaryngologic symptoms of which the patient complains and properly correlate them with the observations of the general physical examination. The latter will often include, sometimes repeatedly, blood counts, cultures and Wassermann tests, spinal punctures, and smears and cultures of the secretions from the head cavities in question, with a study of the gross and microscopic characteristics of the material obtained. Interpretation of roentgenograms must be made with nearly every sinus and bronchoscopic case.

In otology, the examination of the drum and the history of the case are of the utmost importance. The former often necessitates painstaking and tedious clearing of the external auditory canal of wax and skin débris, a procedure with which the student should be thoroughly familiar. The study of the symptoms of pain and tenderness should be most searching as regards location, duration, intensity and nature—whether referred or actual—and show their relationship to the amount and character of the discharge. Hearing tests with voice, watch and acoumeter should be routine. The use of the eustachian catheter, tuning forks, whistles, monochord, audiometer and vestibular tests should be demonstrated and explained at least occasionally. Aural discharge must be studied as to its amount, character and microscopic observations. *Assistance* at *mastoid* and other major operations on the ear is all the operative work that should be permitted. Whether the intern shall perform myringotomies, even under proper supervision, is an open question, for what he is taught to do in the hospital he is almost sure to continue to practice after he leaves. In infants and very young children, reliable subject information is difficult and frequently impossible to obtain and the objective appearance of the drum is often almost the sole index of the extent of the underlying pathologic condition. Paracentesis either completely effaces this invaluable evidence or changes the appearance of things to such an extent that when the otolaryngologist finally sees the case he encounters great difficulty in differentiating disease from trauma.

In rhinology, the local examination should begin with a comparison of the breathing efficiency of each side of the nose, first with and then without the use of a nasoconstrictor. External deformities and internal irregularities, developmental or traumatic, should be noted, together with amount, character and location of discharge and crusts. The periodicity and seasonability of symptoms is to be studied. The location of bleeding must be definitely determined. Transillumination and x-ray data must be checked against clinical observations.

The application of casts, splints, posterior nasal packs and other appliances should be demonstrated. The uses of suction and irrigation should be explained, together with the ever present danger of ear and sinus infection resulting from the presence of fluids—water, as well as inflammatory secretions—in the nasal cavity. The recognition of accessory nasal sinus disease must be taught. The advantages of photography, plaster casts, wax molds and roentgenograms, to record graphically the location and extent of deformities and fractures, and the need for their earlier recognition and treatment, should be emphasized. That the nose is the point of entrance of many general constitutional infections must be repeatedly pointed out, as well as the local nasal signs by which these diseases manifest themselves. The treatment and, as far as possible, the prevention of head colds in infants and adults should be set forth in detail, together with the use of the local applications that give so much relief—temporary though it may be—to the sufferer from the various forms of atrophic rhinitis with their accompanying laryngopharyngitis or chronic sinusitis. That the nasal cavity and its adjoining sinuses may lodge foreign bodies and new growths, malignant as well as benign, and that congenital syphilis may here first bespeak its presence, are facts that are not to be forgotten. The operating room training of the intern in rhinology should be confined to *observation* and *assistance*.

Laryngology is defined in the American Illustrated Dictionary as the study of the larynx and its diseases. Recently the term has become vastly more comprehensive. It now includes the mouth, oropharynx, nasopharynx and laryngopharynx, larynx, tracheobronchial tree and esophagus. The history and physical examination that the intern makes should be thorough and painstaking, and the former as concise as circumstances will permit. The conformation of the jaws and teeth with the general condition of the latter, the presence of swelling and membranes, the appearance and movements of the tongue, the height and width of the arch of the palate, the character of the voice, the ease of swallowing and breathing are some of the principal things the intern should be taught to observe. The appearance of the larynx, its contents and adnexa as seen through the laryngeal mirror, and the condition of the nasopharynx, as observed by finger palpation, speculum or nasopharyngoscope, should be ascertained when specially indicated, if not indeed as a routine. Throat cultures before admission, diphtheria isolation and quarantine regulations should be explained. Intubation and emergency tracheotomy should be demonstrated. Laryngoscopy, bronchoscopy, esophagoscopy and gastroscopy should be discussed and witnessed whenever possible.

In my opinion, all things considered and in full realization that many valid objections and even real dangers may attend this procedure, the intern should be taught how to do tonsil and adenoid operations by the attending otolaryngologist and allowed to do this himself, under proper supervision, if he shows average technical skill. It is true that this plan encourages the intern to do this work in his general practice and that he, as a "jack of all trades," cannot reasonably be expected to do this as well as one who limits himself to this particular specialty. From our personal point of view as otolaryngologists, it can be argued that this dissemination of our work places an unjust economic handicap on the further development of our specialty. On the other hand, following Billings' announcement of the theory of focal infection twenty years ago and its subsequent general acceptance by the medical profession, these operations have come to outnumber all other surgical procedures combined in many general hospitals. In many institutions not immediately connected with medical schools in which medical practice is not thoroughly departmentalized, much of this work is done by general surgeons and practitioners from whom the student will get this work—and less well—if we do not teach him. In the end, desirable men will not be attracted to otolaryngology in sufficient numbers, with the result that the public will not be served as well.

CONCLUSION

I believe that if otolaryngology blazes a trail in this new development of medical education which other specialties can adapt to their own particular needs, it will have contributed to the betterment not only of ourselves and our profession but to the welfare of the public in general.

25 East Washington Street.

ABSTRACT OF DISCUSSION

DR. CHARLES W. RICHARDSON, Washington, D. C.: The subject of education in otolaryngology is a potent one. After thirty years of teaching in otolaryngology, I think that I can discuss this subject. In undergraduate work my first statement to the class was invariably, "I want you to understand that I am not making specialists out of you." At the clinics I never allowed the students to see any operative work. The dispensary was their place. The dispensary is the place where undergraduate students learn to use instruments: where they learn medical technic, and where they acquire a knowledge of what is normal and what is abnormal. The fifth year work in a general hospital as interns, as suggested by Dr. Hayden, is fine, except that I am sure that Dr. Hayden in six weeks cannot get his curriculum through; there is too much in it. It is making six weeks' specialists. I believe that students should be given a knowledge of otolaryngology, but it should be along diagnostic lines. They should be taught where to keep out, not where to come in. The great trouble now with young men in going into otolaryngology is that they have no interest in anything except the operative field. They do not have time for an intensive study of the condition of the patient. We must teach them more of diagnosis and a careful consideration of the case. I feel that we should go back to the old days when men were put at a table, those men who were to become specialists, and grounded for six months or more in diagnosis before they were ever allowed to operate on a patient.

DR. N. P. COLWELL, Chicago: Dr. Hayden's paper is very timely now, but would not have been only a few years ago. In the period from 1906 to 1915, when efforts were made to find out what hospitals would be open for interns, there were not enough hospitals to supply places for the students then graduating. Since then, however, the hospitals have so increased, both in numbers and in size, as to create a demand for interns by at least three times as many hospitals as can possibly be supplied. That change has given us an opportunity to demand improvements in the intern service. Now the students in the third and fourth years of the medical schools receive much more clinical instruction than in former times and the internship, or fifth year of clinical instruction, should be better developed. Not until a year ago could the Council reasonably require at least 10 per cent of autopsies in intern hospitals. The majority of hospitals approved for interns were already obtaining a higher percentage, but others were obtaining less than 5 per cent. Beginning the first of this year autopsies in 10 per cent or more of the deaths occuring in intern hospitals were required, and that 10 per cent must consist of complete autopsies by a pathologist, with the autopsy report utilized in clinical-pathologic conferences, at regular staff conferences. With the increase in autopsies will come improvements in other respecrts, so that Dr. Hayden's suggestion of developing a curriculum for this fifth year of rotating service is very opportune. I am not a specialist

in ear, nose and throat work and cannot suggest the content of this fifth year course; that rests with you who have the matter more in hand. But the suggestion of the curriculum for this fifth year is opportune, and the ideas set forth will have a great suggestive value to hospitals in general, which in time will probably adopt some such scheme.

Dr. Jacques Holinger, Chicago: I cannot help comparing this paper with the conditions I found in 1892 when I first started to practice in Chicago. At that time a great number of physicians had passed two winters in medical schools — not summer, for summer was physicians' vacation. When Dr. Senn first requested three full years the students said that he was crazy. Now we have four years, with a fifth internship. A man cannot get out into practice until he is 28 or 29 years old. I do not know where we shall end. I am the father of a son who has finished college and is just starting to study medicine. He will have many more years to go before he can "get off my pocketbook." The program that Dr. Hayden recommends to be taught in six weeks is too heavy. Dr. Hayden cannot do it and nobody else can. How can we induce an intern to work in this line? To see anything and know what one sees takes patience and endurance. An intern should not be allowed to think that the work consists simply in using a speculum and a tongue depressor. The last thirty years have given me sufficient opportunity to handle interns in different hospitals, and interns of different social positions, of different grades of intelligence, and of different degrees of preparation. There is only a small percentage who show interest. They overlook apparently minor technical details and never get anywhere. If the student has the perseverance and a good teacher he will be all right. If either is lacking he will not go far. The sooner the profession at large admits and an intern recognizes that the specialty of ear, nose and throat work is scientifically difficult and has a great many technical details to master, which takes hard work, the sooner the young man will settle down and make up his mind to conquer a serious proposition. Then a great deal of time will be saved which is now spent in ridiculous dabbling around.

Dr. Harris P. Mosher, Boston: Dr. Hayden started out in a brilliant fashion. He gave a very illuminating diagram and I followed him with a great degree of interest until he got into billions of dollars, and then I lost him. The first part was better, but the second part was nothing but the syllabus of a textbook and I will not attempt to describe that. I have been through house officerships in two phases: first, there was the house officer who was put over the surgical department, a three months' house officer (I never had a six weeks' house officer), and then there was the house officer of the special hospital. If the house officer is given the time and the instruction, his service will amount to something. But we have been lazy about this. We are not giving the house officer enough time and that is why he is not a better specialist. It is human nature to want to operate, and if one keeps a man from operating who is technically fit to operate, one cannot hope to arouse his enthusiasm. One must watch him and see that he is capable of operating, and if so, give him the privilege of operating.

Dr. Horace Newhart, Minneapolis: It has been my misfortune to have to grade, within the past three days, while endeavoring to be host to many dear friends, between 140 and 150 examination papers on the subject of otology. This has caused no little embarrassment and mental depression; for, after teaching otology for something like fifteen years, I am today more than ever impressed with the fact that in many medical schools we are not doing the subject justice in our undergraduate teaching. The reason is that the importance of the subject as regards the saving of human life and the conservation of our special sense of hearing is not adequately recognized by those who frame the curriculums in undergraduate medical schools. The suggestions made by Dr. Hayden in his paper seem to me to afford a possible way out in providing specific training for these men in their fifth year which will give them a thorough grounding in the elements of safe and sane diagnosis for the general practitioner in the field of otology. During the past week we have lost two patients with sinus thrombosis of otitic origin. In both cases I believe that the patients would still be alive had the general practitioner who was first in charge received as thorough training in otology in regard to diagnosis as is required for the general practitioner today in other fields of practice. I am convinced that if the average physician on completing his internship were no better qualified to practice obstetrics than he is prepared to recognize ear diseases and their complications, many of us would be born dead and the sacrifice of human mothers would be appalling. Without attempting to dwell further on the subject, I would simply make the plea that we otolaryngologists do all that we can to persuade the men who formulate the curriculums of our undergraduate schools to provide somehow for sufficient instruction to make of the general practitioner not a specialist or a skilled operator but a safe and sane diagnostician—a practitioner who will appreciate the serious possibilities pertaining to ear diseases, and will recognize and appreciate the importance of the work of the man who has taken the time to qualify himself thoroughly as a specialist in these lines.

Dr. Austin A. Hayden, Chicago: Operating was not mentioned, except as a means of confirming a diagnostic procedure, and in regard to the advisability of teaching interns to do a tonsil and adenoid operation instead of having the general practitioner teach them. I apologize for the long list of details, but it seemed to be necessary. It seems to me that with the increased attention that is being given to medical education all over the country in medical colleges and by the American Medical Association, it is high time that we give some attention to the fifth year. Remember that my thesis is the fifth year strictly, in the general hospital, where we as attendants at that hospital are forced to limit our interns to a period of six weeks' instruction, or maybe three months, but not longer. No suggestion was made in regard to a residency that extends over a long period of time.

BETTER TRAINING FOR ACADEMIC CAREERS IN INTERNAL MEDICINE *

JOSEPH H. PRATT, M.D.
BOSTON

The American Climatological and Clinical Association is composed of men whose interests extend over the whole domain of internal medicine. Its development in recent years has shown this. Beginning as an organization of physicians especially concerned with the diagnosis and treatment of diseases of the lungs and the study of climate, its field of interest has broadened with the passage of time until today it is in truth the American Clinical Association.

If internal medicine in this country is to keep abreast with the advance of the fundamental medical sciences, it is essential that the best possible training should be available to the young men of today who give promise of becoming the clinical teachers and consultants ten or fifteen years hence. The problem of furnishing the best education for young men who aspire to gain a mastery of internal medicine is our problem. At the present time, after his internship is finished there are few opportunities for a young man to continue his clinical training under the direct supervision of university professors or other clinical leaders. He must live, and if his ambition is fired to follow an academic career, rarely more than two roads are open to him, and both are off the direct line of his objective. He may take up private practice or he may, if he has shown signs of promise, get a research fellowship or an assistantship in some laboratory. Up to twenty years ago the former

* President's address, read before the American Climatological and Clinical Association, Washington, D. C., May 1, 1928.

course seemed the natural one, and a training in general practice combined with voluntary dispensary and hospital work was the preparation for professional positions in clinical medicine and for the career of a consultant. In recent years the transplantation of the laboratory worker with little clinical training or experience to a professorship in internal medicine has been frequently made. It is openly lamented among some influential groups of clinicians that scientific workers trained in the laboratory and with little clinical experience are elected to clinical chairs. The old days are recalled when "practical men" instead of "scientists" occupied these positions. There is a real danger if training in the fundamental sciences is carried to such a length by those who aspire for a career as a physician that the essential training in clinical medicine itself is neglected. Too prolonged isolation in a laboratory often causes a young man to lose interest in the wide range of problems presented at the bedside and in the dispensary. As heads of our clinics we need physiologic clinicians and not clinical physiologists.

I feel, however, that the fears expressed have not materialized. Look about at the medical clinics today and compare them, if you can, with those that existed in the same schools in 1900. Where then were the clinics organized on modern lines except the Johns Hopkins Clinic under Dr. Osler? It seems to me that there has been a steady advance in clinical medicine in this country during the past thirty years. I believe that, taking our medical schools as a whole, clinical medicine was never as well taught as it is today. The criticism is often heard, as I have already implied, that the men who are made chiefs of medical clinics are lacking in clinical experience. This is often true. Nevertheless I maintain that a good knowledge of one or more of the fundamental sciences and a demonstrated ability to carry out investigative work of high order is the best foundation on which to develop clinical experience. Without a firm foundation of physiology or pathologic anatomy, clinical experience can with justice be compared to a house built on the sand. It is often amazing to see how little sound knowledge of medicine a practitioner has acquired whose clinical experience has extended over many years.

Thirty years ago there was a great gulf fixed between the laboratories and the clinics. Students on taking up clinical work were not slow in realizing this, and interests kindled in the chemical and pathologic laboratories died out quickly in the clinics. Nearly a hundred years ago, however, Marshall Hall, the distinguished English physician, said that "to become good and enlightened practitioners, we must become able physiologists." Frerichs realized the truth of this statement and placed it as a motto on the title page of the first book he wrote (1851). Many years passed before this sentiment of Marshall Hall gained endorsement in America.

Clinical investigation by the methods of physiology received a great impetus from Dr. Meltzer and the Society for the Advancement of Clinical Investigation, which he founded. The program of their meeting held here yesterday is evidence of the fruitful work its members, all clinicians of the younger generation, have done during the past year.

Clinical experience without a scientific foundation I have just compared to a house built on sand, but a scientific foundation without clinical knowledge and experience is no house at all.

Present methods of developing men for academic positions, while better than they were thirty years ago, are far from ideal. There is no reason why young men who select internal medicine as a vocation should not have the opportunity to acquire at the same time a knowledge of the laboratory sciences and of clinical medicine. To develop to the full a man's mastery of internal medicine he should begin young, and his study of clinical cases should be continuous for years if he is to attain to ripe knowledge. "See autopsies daily" was Osler's advice to the young man who aspired to a career in internal medicine. This is important, but it is even more important that he should see sick people daily if he is to grow into his full stature as a physician.

Such a dual development as is here urged would mean that 50 per cent or more of the day's work be devoted to routine study of patients and 50 per cent or less to research work in some narrow field that can be cultivated intensively and thoroughly. This training could be carried out in any good clinic by placing in charge of the wards paid graduate assistants instead of interns as at present. This is not an untried experiment. In German clinics the wards or stations have since time immemorial been under the immediate direction of paid full-time resident assistants. The best of these assistants are reappointed year after year. They often remain in the clinic from five to ten years before they leave to accept an academic post or other opening.

Dr. Osler's staff organization at the Johns Hopkins Hospital was a combination of the German and the American plan. There, as in all other hospitals in this country, interns were appointed who had direct charge of the wards. I believe that the ward work would be of higher quality and that better care would be given to the patients if the responsibility of the routine work of the wards were placed in the hands of assistants who had had one or more years of clinical experience rather than having it delegated to interns who have had little or no previous experience.

The plan proposed of supplanting interns by paid assistants seems worthy of trial, especially as the need is great of giving the best preparation to men seeking full-time clinical appointments. Sir William Osler sounded a note of warning regarding the full-time project when he wrote to a friend in 1914 "that the danger will be of getting half-baked clinicians who do not know chickenpox from measles." The plan now proposed, if carried out in two or more medical centers, could be modified in detail. The central idea is that better and more prolonged clinical training should be carried out simultaneously with research along any line. For the young man of promise, overspecialization in clinical study should be avoided if he aspires to acquire clinical wisdom and knowledge in the whole domain of internal medicine.

University medical clinics in America are relatively small. They usually have 100 beds or less. An ideal clinic for the training of graduate assistants should have from 150 to 200 beds, so that the clinical material should be abundant and varied. Municipal hospitals of this size already exist, and might be made available. The clinic should include cases of all forms of disease, chronic as well as acute. It might be well to have the cases so distributed that one ward could be devoted to heart disease, another to diseases of metabolism, a third to pneumonia and other respiratory diseases, and so on. In this way an assistant could have charge of the ward for cardiac cases for six months or so and then be moved to another ward where, for example, diabetes or gastro-intestinal disease could be intensively studied

for another six months. If this plan were followed, in four or five years he would have made a good beginning in his clinical training. At the same time he could have continued a single line of investigation in the laboratory, let us say a study of the blood in nephritis by the methods of physical chemistry, for the entire period of four or five years. At the end of this time if called to an academic position he could mingle at a local medical society with clinicians as a clinician, and if the subject of the meeting was, for example, the diagnosis and treatment of bronchiectasis, he would speak from his own personal experience if called on in the discussion. Furthermore, if he presented the results of his laboratory studies, let us say on the chemistry of the blood in nephritis, before the American Society for Biological Chemistry or a similar body, he would probably be regarded as one worthy of a hearing.

It might be said that in not a few of our leading hospitals today there are on the staff a resident physician and assistant residents. This marks a great advance over the earlier day. However, in no American hospital so far as I know do these assistant residents have charge of the wards. They are relieved from the careful detailed study and the responsibility of the cases by the interns. The plan I advocate is the placing of a paid assistant who has finished his internship elsewhere in charge of each ward with the duties and privileges now given to the senior intern. Every one of us knows from personal experience that the patients whose case histories he remembers are the ones he has personally examined and for whose care he was personally responsible. Those are the ones that stick in the mind. Our real clinical education is largely based on these, not on cases worked up by others that we see in a clinical demonstration or on a ward visit. Memory of them falls from the mind like rain-water from a pitch roof. Furthermore, the residents and assistant residents in the American clinics with which I am acquainted devote their time largely to research work. Interested to know how conditions in this respect vary in America and Germany, I have made a comparative study of three leading clinics in the United States and three in Germany. The average number of hours per staff member above the grade of intern per week throughout the year devoted to routine work in the wards and dispensary in the three American clinics selected was, in 1927, three hours per week in the first, four hours in the second, and six hours in the third. In the three German clinics (Leipzig, Munich and Würzburg) it was twenty, twenty-two and thirty-one hours. These figures show strikingly that the German assistants are devoting a great deal more time to routine clinical work than the American assistants in the three clinics studied. Professor Krehl told me recently that he feels strongly that the young graduate tends to spend too much time in his earlier years in research work, with the result that his clinical education suffers. He now does not encourage an assistant to do research work during his first two years.

At the present time I am told there is difficulty in securing men to remain on the resident staff of university medical clinics after their internship is finished. I think that if the educational value of the clinical training is raised to a higher level, and if the assistants are paid salaries sufficient for them to live without financial worry, the promising young men will see that through such an apprenticeship lies the most direct road for them to travel if they wish to reach the goal.

270 Commonwealth Avenue.

WHAT THE AMERICAN MEDICAL ASSOCIATION EXPECTS OF THE TEACHING HOSPITAL*

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CHICAGO

In attempting to write a paper on this topic I shall give the word "expects" its prophetic meaning and indicate what I believe the future development of hospitals will bring forth. The American Medical Association may suggest principles or make suggestions but deems it a high privilege to work with the officers of hospitals, who, after all, are in the firing line and deserve credit for most of the improvements made in recent years. It is on the observance of such improvements and the high ideals of those conducting our better hospitals that the opinions herein expressed are based.

The topic asks: What is to be expected of the "teaching hospital"? This is a comprehensive phrase since every hospital is, or should be, a teaching hospital. There is no hospital which does not have an educational function which if carried out will enable it to render a better care to its patients and react beneficially on the institution itself. It is the educational activity in a hospital which provides the real urge for development in other respects, leading to a constantly increasing service to humanity.

VARYING EDUCATIONAL OPPORTUNITIES

Some hospitals, because of their location or relationship, have more extensive teaching functions than others. The largest opportunities undoubtedly rest in the hospital connected with an undergraduate medical school, in which, usually, all members of the staff are also members of the teaching faculty. It is this type of hospital which commonly furnishes every variety of medical instruction and which, undoubtedly, has reached the highest development as a teaching hospital. Such instruction, briefly, would be for medical students, nurses, interns, residents, staff members, other physicians in the community and, possibly, extension courses for physicians located in the more remote districts.

Besides actual instruction, the hospital wields a powerful influence for good in its locality through the information gained by its patients and extended by them to the public in the community, as well as by the hospital's visiting nurses and social service workers. Indeed, from the observance of recent progress it appears that the possibilities whereby a hospital can wield its educational function have not been appreciated and are only at the beginning of their development. The opportunities for exerting such an influence are by no means limited to hospitals connected with medical schools. The extent and value of the influence which any hospital can wield depends, first of all, on the fulfilment of its educational function. The more remote the district in which the hospital is located, the more important is this function since it has less competition or cooperation with other hospitals and, therefore, a more definite duty in its community.

THE PHYSICIAN'S CONTINUATION SCHOOL

The hospital's educational function is a force working from within. Its development usually begins

* Read before the American Hospital Association, San Francisco, Aug. 6, 1928.

through the use of its immediate facilities for the further training of its own personnel. The routine of examining and caring for the patients brings a constantly increasing knowledge and skill to the staff members themselves. As hospital records show more careful examinations, better histories, more accurate and comprehensive records, gradually increasing percentages of autopsies and better conducted staff conferences, the educational benefits reacting on the hospital itself will gradually but assuredly be increased. To an increasing extent, therefore, the hospital is acting as a continuation school for the further development of practicing physicians themselves. On the extent to which its routine methods have been developed depends the value of the teaching being carried on in any hospital. The hospitals that have responded to this educational urge from within, and have made the best use of their resources, to an equal extent are becoming examples of what a hospital should be and also are showing what a hospital routine should be.

In the examination and supervision of hospitals, therefore, it has never been necessary to establish a schedule of arbitrary rules. The American Medical Association has found it necessary only to note what the better hospitals are doing and present that as an ideal toward which other hospitals may strive.

THE SPIRIT OF INVESTIGATION

Back of the progress educationally in hospitals has been the spirit of investigation, rather than "research." The latter term, I fear, has come to be much misunderstood or misinterpreted. It may be more plainly defined as the use of the scientific method or a more extensive use of our unaided senses in observing more accurately and in recording what is seen so as to have the benefit of the facts which have accumulated from such observations, supported or verified as they may be by the later and more precise laboratory methods.

UNDISCOVERED TALENTS

The increasing development of the educational function in hospitals is leading to the discovery and utilization of the teaching ability of certain physicians in hospitals and sometimes in remote or otherwise unexpected places. In the search for further opportunities for graduate medical education, most excellent courses for graduate study are found sometimes in small hospitals or hospitals in outlying districts in which a few physicians or even a single physician or surgeon has demonstrated a remarkable teaching ability based on his own careful methods, which may have resulted also in the accumulation of information which he is able to pass along to others. In such developments there is an educational opportunity in every hospital regardless of its size and location, and such instances are becoming more common as more and better trained physicians are now being graduated. Thus the hospital has among its educational possibilities that of becoming a normal school for the discovery or training of medical teachers.

DISTINGUISHED FEATURES

An inspector of hospitals soon learns to tell almost at a glance the extent to which a hospital's educational function has been developed. Sometimes unexpectedly he finds a library which, although small, has a collection of well selected medical textbooks and periodicals. He notes, also, that the library is not only there but is actually being used and that members of the staff are keeping themselves well informed in regard to the latest literature on various medical topics, if not also being engaged in efficient research work. The inspector may note that, through this small library, books, pamphlets or other literature bearing on particular topics are being regularly obtained through loans from large medical libraries in nearby cities, and his impressions from the library are frequently more than borne out through further observations in the hospital.

In recent years it has become recognized that the percentage of deaths on which autopsies have been performed is an index of the hospital's progress and efficiency. This is not due to the mere fact that autopsies have been obtained but that the hospital is securing the highest educational value from them. This requires the keeping of careful records, the comparison of symptoms and physical observations with the actual causes of death as revealed by the autopsy, and the presentation of such facts in staff conferences.

ESSENTIALS IN A TEACHING HOSPITAL

From the foregoing generalizations the three chief essentials in a teaching hospital may be more tersely set forth as follows:

1. *Staff and Other Personnel.*—The first essential in any hospital is a staff of physicians who are not only graduates of acceptable medical schools but have been selected because of their high moral and professional standing. As has been recently stated, they should be "selected discriminately and not promiscuously solicited."[1] Such a selection of the hospital personnel marks a distinction between the hospital conducted for the highest interests of its patients and the one conducted solely for profit. The other personnel in the hospital—superintendent, nurses, dietitian, orderlies—should also be selected with equal care, so that the greatest degree of hospital efficiency may be obtained.

2. *Board of Directors.*—The second essential is the proper control of the institution under a carefully selected board of directors or trustees made up preferably of laymen who are not only prominent and influential in the community—or some other equally qualified body—but who also fully appreciate the essentially high moral and professional tone needed in the modern hospital. Fortunate, indeed, is the hospital having a board of control which appreciates the importance of leaving to a wisely selected medical staff the professional activities of the institution.

In recent years it has been found that boards of directors have another important function, since with them rests the final responsibility for the proper care of patients in the hospital. As the first essential of any hospital is a competent staff, it then becomes the duty of the board of trustees to see that no other than properly qualified physicians are permitted to treat patients in the institution. This function has been recognized by the courts, for in every instance in which the refusal or dropping of a physician from the hospital staff has been followed by legal procedures, the board of directors has invariably been upheld.

In this period of rather chaotic conditions in the control of medical education and practice by legally established boards, the modern standardized hospital appears to be the only place into which fallacy, quackery and cultism have not been enabled to force their way. Just now, therefore, among other things, the modern hospital stands as a center of sound medical practice free from the numerous cults or fads which are of doubtful value even if they are not actually dangerous.

1. Annual Report of the Hospital Section of the Duke Endowment, 1927.

3. *Hospital Plant.*—The hospital must have a well constructed and a well equipped plant. It should have a modern fireproof building which can be properly lighted, ventilated and maintained, equipped for the proper medical and surgical care of its patients, which includes operating rooms, laboratories, private rooms and wards for patients. It should also have the essentials for its educational advancement, such as record systems, autopsy room with refrigerating plant, library and pharmacy.

A CONVENIENT AND SAFE PLACE FOR MODERN PRACTICE

The development of the modern hospital was made necessary partly because of the more highly technical and complicated therapeutic measures which have come into general use during the last thirty years. The hospital is the place where such measures can be applied with the greatest convenience and safety. It is the only place that has the well equipped laboratories in which the modern, more exact scientific methods in diagnosis and treatment can be provided. It is in hospitals, with their staffs of carefully selected physicians, that these more elaborate therapeutic measures will assuredly be applied by physicians who are expert in their use. So given, these modern methods are saving thousands of lives and preventing much needless suffering. Attempted by improperly trained persons, however, such methods are extremely dangerous, even if given in a hospital. This is another emphatic reason why a hospital, first of all, should retain on its staff only well trained physicians.

A CENTER FOR TRAINING IN SPECIALIZATION

The amazing expansion of medical knowledge during the last half century, coupled with the development of the more highly technical methods of treatment, has made it virtually necessary for physicians to confine their practice within the narrower bounds of some specialty. Such limitation is necessary so that the physicians may become more highly proficient in that field, more skilful in developing and applying modern and serviceable methods of treatment and, still more important, more successful through investigation and study in discovering previously unknown facts which may be utilized in gaining the victory over diseases heretofore unconquered, all of which will be of increasing benefit to humanity. The increasing trend toward specialization requires also that physicians representing the various specialties work together in groups rather than continue in general practice. This trend toward group practice is another influence responsible for the rapid increase in the numbers and size of hospitals during the last fifteen or twenty years.

Because of the careful supervision over them, hospitals are now not only satisfactory places for group practice but also have developed into excellent schools for the training of specialists. Besides interns, many of the larger hospitals now secure one or more residents in each of the several specialties, who are usually selected from among the interns. These residents continue for one or more years in the hospital under the direct tutelage of a physician recognized as being highly proficient in his particular specialty. Where, indeed, could a more satisfactory training in a specialty be obtained?

For such advanced teaching the modern hospital is supplied to an unusual degree with the essential buildings and equipment. It has departmental staffs of physicians who are highly skilled in the several specialties as well as the more modern and well established departments of pathology, radiology, physical therapy and dietetics.

Besides being the training school and workshop of the modern physician, the hospital is also proving to be a solution to the problem of providing medical service for the rural community. It is providing also the means whereby the physician can greatly enlarge his service to the public. The hospital is now recognized as the best place for the care of patients, who, by going to the hospital and to the physician, enable him to care for many more patients than would be possible if he had to spend the greater part of his time going from patient to patient.

A great problem still to be faced is how these modern facilities and benefits can be brought within the physical and financial reach of the greatest possible proportion of humanity.

THERAPEUTIC-MINDEDNESS

A PEDAGOGIC PROBLEM *

PAUL REZNIKOFF, M.D.
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Whether medicine is primarily an art or a science may continue to afford subject matter for orations indefinitely. But every one connected even remotely with the profession agrees that, whatever else the physician may be, he is above all a healer. This concept dominates the patient, the practitioner and even the fundamental scientist. Mathews [1] writes, "It is the neglect of therapeutics, which is, I believe, one of the most serious shortcomings of present-day medicine." The instructor of clinical medicine or the visiting physician is constantly reminded by the students and interns that they know very little about the treatment of the patient, and it is common experience that whenever students have a choice in the organization of the curriculum they usually emphasize therapeutics.

In order to study this problem in some detail and, if possible, to apply the results of such an analysis to the course of instruction, a review was made of 1,357 charts studied during the current year from the Second (Cornell) Medical Division of Bellevue Hospital. This is one of the teaching services of Cornell University Medical College. Most of the interns are former students of Cornell who have had some of their undergraduate training in the wards of the division.

It is necessary for one not connected with a municipal hospital to have a proper conception of the difficulties associated with such an institution. Five house officers carry on the routine work of three wards. These wards are supposed to take care of eighty patients. But from December until May from ninety to 150 patients are usually in the wards, the extra number occupying cots. During the past year (from June, 1927, to May 31, 1928) there were 2,731 admissions. Of these, 359 and 423 occurred in February and March, respectively. All these patients must receive adequate attention from an intern and nursing staff which is organized in size and equipped only for the ordinary requirements of the service. The only help comes from the clinical clerks from October to April and their presence on the wards frequently neutralizes some of their assistance. These limitations are recognized by every one associated with

* From the Department of Medicine, Cornell University Medical College and the Second (Cornell) Medical Division, Bellevue Hospital.

1. Mathews, A. P.: Some Applications of Physical Chemistry to Medicine, Science **66**: 603 (Dec. 23) 1927.

the institution, but in spite of the difficulties involved the work of the resident staff and of the nurses is of a high order.

This description has been given in order to understand the review of the charts. No account was taken of the peculiar problems of the service. Gradings were made on the basis of the institution of therapeusis in response to the complaint or clear indications in the patients. The advisability of some particular procedure or medication was not considered as much as the evidence that the physician was thinking of relieving or curing the patient. In other words, this study was not so much concerned with specific therapeutic knowledge as it was with therapeutic-mindedness. Although each case presented its own problems, the general plan was the following. Two factors were considered separately: (1) immediate treatment (within eight hours after admission), in response to clear-cut complaints or indications; (2) treatment during the course of the patient's stay in the hospital, in response to complaints or indications or leading to permanent corrections. Eight hours is probably too great a lapse of time for a patient to wait before obtaining some relief. However, in the analysis this arbitrary time was taken because it indicates, as a rule, that a new nurse and intern have come on duty, and definitely determines whether treatment was instituted by those first confronted with the problem of the new admission. Each case was considered under these two items in one of four classes: (*a*) no treatment indicated; (*b*) institution of treatment; (*c*) no institution of treatment, and (*d*) institution of treatment questionable in indication, time or procedure. It might be well to give typical illustrations of the method used. If a patient is admitted to the ward with a sore throat, general malaise, temperature of 103 F., and the house officer orders a throat irrigation, acetylsalicylic acid and forced fluids immediately after diagnosing acute follicular tonsillitis, the procedure is credited as proper institution of immediate treatment. If this patient receives no treatment for eight hours, the rating is given as no institution of treatment. If a patient is admitted to a bed because of feeling weak and a diagnosis of senility is made, no special treatment is considered indicated. If a patient complains of a pain in the chest and of constipation and a cathartic is ordered but no alleviation of the chest pain is attempted, the procedure is considered questionable treatment, because it is only partially satisfactory. A questionable rating is also given when a patient complains of a symptom for twenty-four hours and treatment is not instituted until the next day. As far as possible the same general standards were maintained for each case, and therefore the relative variations in treatment during the year and for different diseases should be apparent.

Evaluation of therapeutic procedures when the cases are arranged according to the month of admission is modified by the fact that very few charts from the summer and early fall months were included in this study. However, the number of admissions during November (186) or December (196) was about the same as during each of the five previous months. During May the wards were being renovated, and only 133 patients were admitted.

With these qualifications in mind, the constancy of the ratings is rather remarkable. Except for the "good + questionable" percentages under "immediate treatment" during the months of June and July (90 and 80 per cent, respectively) and the unexplainable low percentages under "treatment during course of illness" during November (71 per cent good and 88 per cent good + questionable), the values are as close as can be expected from such an analysis. Good immediate treatment varies from 46 to 64 per cent, averaging for the year 52 per cent. The percentage of good treatment plus the percentage of questionable immediate treatment varies from 59 to 71 (excluding June and July), and averages 66. Good treatment during the course of illness varies from 86 to 100 per cent (exclud-

Evaluation of Therapeutic Procedures Instituted in Different Diseases

		Immediate Treatment						Treatment During Course of Illness					
						Percentage of Treatments in Indicated Cases						Percentage of Treatments in Indicated Cases	
Diagnosis	Number of Charts Reviewed	No Treatment Indicated	Treatment	No Treatment	Questionable Treatment	Good	Good + Questionable	No Treatment Indicated	Treatment	No Treatment	Questionable Treatment	Good	Good + Questionable
Lobar pneumonia	167	1	96	59	11	58	64	5	161	1	0	99	99
Chronic myocarditis	143	21	62	53	27	51	73	17	111	7	8	88	94
Influenza	82	3	31	41	9	40	51	10	62	5	7	86	96
Alcoholic poisoning	63	6	39	12	6	68	78	28	30	1	4	86	97
Tonsillitis	59	1	31	22	5	53	61	1	45	6	7	77	89
Nephritis	54	9	19	16	10	42	64	6	40	3	5	83	94
Bronchitis	49	4	23	21	4	48	56	8	30	3	8	73	92
Chronic cardiovascular disease	48	4	17	20	7	40	56	5	40	1	2	93	98
Arteriosclerosis	43	20	10	7	6	44	70	14	20	4	5	69	86
Arthritis	43	2	20	18	3	49	56	1	36	2	4	86	95
Acute rheumatic fever	42	0	29	11	2	69	74	0	41	0	1	98	100
Cerebral accidents	42	15	20	3	4	73	88	14	23	2	3	81	93
Syphilis	31	10	10	6	5	48	71	6	18	1	6	72	96
Psychiatric conditions	30	6	9	3	12	38	88	6	19	4	1	79	83
Gastro-intestinal neurosis and constipation	29	6	9	12	2	39	48	3	18	3	5	69	83
Bronchopneumonia	28	1	16	8	3	59	70	0	27	1	0	96	96
Diabetes mellitus	28	2	19	2	5	73	92	1	26	1	0	96	96
Pleurisy	27	1	13	13	0	50	50	1	21	2	3	81	92
Carbon monoxide poisoning	22	5	17	0	0	100	100	12	10	0	0	100	100
Neoplasms	21	9	6	3	3	50	75	2	16	1	2	84	95
Senility	20	8	3	3	6	25	75	9	11	0	0	100	100
Tuberculosis, pulmonary	20	4	7	6	3	44	63	6	11	2	1	78	86
Gastric and duodenal ulcer	19	3	6	5	5	38	69	2	14	2	1	82	88
Asthma	17	0	10	3	4	59	82	0	16	1	0	94	94
Colitis	12	0	3	7	2	25	42	2	7	1	2	70	90
Unknown diagnosis	12	6	3	1	2	50	83	10	1	0	1	50	100
Sciatica	9	0	0	8	1	0	11	0	8	0	1	89	100
Epilepsy	8	4	3	1	0	75	75	5	1	2	0	33	33
Hepatitis and cirrhosis	8	3	3	1	1	60	80	2	5	1	0	71	71
Meningitis	8	0	4	4	0	50	50	0	8	0	0	100	100
Neisser infections	8	0	2	5	1	25	38	0	5	1	2	63	88
Coma, cause unknown	7	0	7	0	0	100	100	6	1	0	0	100	100

ing November), averaging 86 per cent. The percentage of good plus the percentage of questionable treatment during the course of illness varies from 92 to 100 (excluding November), averaging 94.

The two most important facts to be derived from this monthly analysis are that immediate treatment, in view of obvious requirements, is much more defective than treatment during the course of illness, and that the number of admissions per month, an indication of the stress on the staff, plays no great part in the promptness or the adequacy of therapeusis.

The accompanying table represents the compilation of therapeutic ratings according to primary diagnoses, the Bellevue nomenclature [2] being used. This method of designating diseases has certain limitations. For example, hypertension is listed under nephritis, and myocardial decompensation not associated with valvular lesions is listed under chronic myocarditis. In analyzing this table it was found that no information of value could be obtained from those conditions which were represented by less than seven cases, and with certain exceptions, in which the results were strikingly similar, not much dependence could be placed on the ratings in diseases which did not include at least fifteen cases.

Two facts stand out prominently in a review of the table. Here again treatment during the course of illness receives a higher rating than immediate treatment for most conditions. The other striking feature is that treatment is good in conditions which are dramatic, which have a striking complaint, or in which a routine has been worked out. This is illustrated by the immediate treatment of cerebral accidents, alcoholic poisoning, carbon monoxide poisoning, coma (cause unknown), epilepsy and diabetes mellitus. In these conditions "good" immediate treatment is rated from 68 to 100 per cent and the percentage of "good + the percentage of questionable" treatment is rated from 75 to 100. In contrast to these conditions it is instructive to note the diseases which are not immediately serious or in which the complaints are more vague. The ratings for immediate treatment for complaints or indications in sciatica is 0 per cent (good) and 11 per cent (good + questionable); in gonorrheal infections, 25 per cent (good) and 38 per cent (good + questionable); in senility, 25 per cent (good); in colitis, 25 per cent (good) and 42 per cent (good + questionable); in psychiatric conditions, 38 per cent (good); in gastro-intestinal neuroses and in constipation, 39 per cent (good) and 48 per cent (good + questionable). Influenza stands lower than pneumonia in rating for immediate treatment. The evaluation of treatment during the course of illness is complicated by the fact that certain diseases are being studied intensively by assigned investigators. This is true of pneumonia and cardiac conditions and may account in part for the high grades. The conditions which were graded less than 80 for "good" treatment for complaints or indications during the course of illness were tonsillitis, 77 per cent; bronchitis, 73 per cent; gastro-intestinal neuroses and constipation, 69 per cent; pulmonary tuberculosis, 78 per cent; colitis, 70 per cent; unknown diagnosis, 50 per cent; epilepsy, 33 per cent; hepatitis and cirrhosis, 71 per cent, and gonorrheal infections, 63 per cent. All these conditions have not the immediately pressing requirements of pneumonia or cardiac failure.

An interesting result of the survey of these charts is that both immediate treatment and care during the course of illness in the case of nurses and technicians is 100 per cent. Although the eight individuals represented in this group had definite complaints during the course of such illnesses as tonsillitis, influenza and pneumonia and could cooperate intelligently, it is difficult to escape a feeling that the good treatment which they received depended on their close connection with the institution and touches on the secret of the good therapeutist—knowledge of and concern for the patient.

A perusal of the detailed therapeutic measures indicates a marked paucity of physical agents. Throat irrigations and enemas of course were frequently employed; but extra blankets and hot water bags were used only in extreme cases, and ice caps, cardiac caps, ice collars, carbon lamps, poultices, mustard paste and cold sponges were conspicuous by their rarity or absence. For example, in pleurisy codeine was invariably ordered with slight or no relief, while strapping was attempted only once. The failure to order more physical agents is due, no doubt, mainly to the intern's appreciation of the scarcity of nurses. At best each nurse is responsible for from eight to ten patients, and during a great part of the day only one nurse may be present in the entire ward. However, an inquiry among the intern and nursing staff indicated that shortage of nurses and red tape connected with supply of drugs and execution of orders are only partly responsible for this limitation in the therapeutic armamentarium. They all agree that the resident staff has little knowledge of either indications for or experience with physical adjuvants to treatment or simple nursing procedures.

This study has concerned itself with certain features of therapeusis as seen in one service of a hospital. Probably it is representative of conditions in all similar institutions. In private practice the pendulum often swings too far in the opposite direction—prescriptions and therapeutic measures in the absence of or in spite of indications. If a rational mean is to be established, it is important to put a true evaluation on therapy in relation to the entire practice of medicine. To "remind the student that treatment is not the most important procedure in practicing medicine" but "that the most important principle in practice is diagnosis" [3] is poor pedagogy. The relative importance of any part of medicine depends on the particular case, and to the patient treatment is always essential. If we consider disease as an enemy, it is just as ridiculous to attack it by diagnosis or laboratory aid or therapeusis alone or with any routine emphasis on one of these as it would be for a government to attack an enemy first by land forces, then battleships and then aircraft in some sort of routine order rather than a concerted effort to crush the enemy completely in a minimal time. This touches the most important element in the entire question of teaching therapy—the fact that as a rule it is taught separately.[3] If correct instruction is concerned with teaching proper mental habits, it is important constantly to associate treatment with the case. It is a common experience that one keys oneself up for a certain amount of work and that fatigue sets in when the original plan is completed. Thus, after a history is obtained and a physical examination is performed there is usually little energy left for thinking of treatment. This is due to the fact that therapy has been instilled into the physician's mind as an extra subject. The correct psychology is to develop the attitude that the medical study of the patient includes his treatment. How com-

2. Committee of Carlisle, R. J.; Coleman, W.; Smith, T. A., and Dow, E. L.: Bellevue Nomenclature, Clarence S. Nathan, 1922.

3. Giddings, G.: Teaching Therapeutics, Bull. A. Am. Med. Colleges 3: 58 (Jan.) 1928.

mon is the experience of an instructor or visiting physician to find the student or intern deeply chagrined because he failed to diagnose an aneurysm, for which little could be done, but feeling not at all annoyed by a patient's complaint of a headache and failure to sleep all night? This indicates an improper standard of values or, perhaps, improper instillation of proper medical emotions.

What can be done to improve the teaching of therapeutics? Obviously, if students learn very little in thirty hours, increasing the time of instruction to sixty hours will double very little knowledge. In the wards of our division an attempt has been made to meet some of these problems. As outlined in a previous publication,[4] our clinical clerks are requested to write complete therapeutic notes on their own charts. These are expected to contain not only complete prescriptions, including drugs, quantities of each medication, total dosage and frequency of administration, but also amount of fluids, type of diet and other therapeutic measures. The student is urged to pay particular attention to specific details and to write his notes without delay whenever an indication for therapy arises. Thus, Rx B and C drachm 1 is not considered a note.[5] Nor is diabetic diet 3, FA/G 1.5 accepted. The clerk must record three meals a day for at least one week, including articles of diet, quantities and calories. He is also urged to watch the administration of treatment in the ward whenever possible. The students receive their charts after correction and are urged to start a card index system of therapy from their own experience.

In preparation for this, the student comes to the service with the usual training in pharmacology and theoretical therapeutics in his second and third year. During his month of clerkship he has one medication conference at which drugs are seen and tasted, prescriptions and mistakes in therapy are discussed, and the Pharmacopeia, Useful Drugs, New and Nonofficial Remedies, and standard textbooks of pharmacology and therapeutics are reintroduced. One diet conference is held, with the cooperation of the hospital dietitian, at which hundred calory portions of the more common foods and cooked and uncooked diets are shown. Each exhibit is accompanied by the protein, fat and carbohydrate contents. At this conference a brief discussion of mineral and water metabolism is held, an objective demonstration of antiobesity diets is shown, and special mention of postoperative dietary treatment, liver therapy, and diabetic and nephritic diets is made. The student is urged especially to translate into layman's terms what hundred calory portions mean. Perhaps the most important conferences are the three nursing procedure sessions. These are held in the nurse's home by a member of the teaching staff of the Bellevue Training School. The students are confronted with the "Nursing Standards" as soon as they enter the room. These are: (1) safety; (2) comfort and happiness of the patient; (3) therapeutic value; (4) economy of time; (5) economy of materials; (6) economy of effort; (7) neatness, and (8) adaptability and simplicity. In this environment they have the following demonstrations: high hot colon irrigation, enema, rectal and Harris drip, throat irrigation, steam inhalation, turpentine stupes, back rest in the hospital and in the home, making a bed, ice cap, hot water cap, heart cap, flaxseed poultice, mustard paste, hot pack, cold sponge, and restraints. After each procedure the medical indications are discussed. The students are so interested in these conferences that not only do they wish more of them but many have expressed their desire to spend some time as an orderly in the wards that they may master the procedures.

Stress is placed on the fourth year instruction because experience in the details of therapy is obtained with great difficulty during an internship. The demand for uniformity in methods prevents individual case instruction and orders are usually given as B and C for headache, and R and S for constipation, sometimes without any knowledge of the contents of the mixture and rarely with any conception of dosage. For this state the visiting physicians are usually at fault. A note from the attending physician usually ends with the diagnosis. Training in therapy for the house officers will begin when the visiting physician adds a therapeutic note immediately after his diagnosis. The value of such a procedure will no more be diminished if the comment is "none indicated" than is the value of rounds if, after diagnosis, "deferred" or "unknown" is recorded. Of course, the more detailed and individual the treatment, the more instructive the lesson.

The essential feature of therapeutic instruction, therefore, is not more facts in an isolated way. Heaven forbid that we ever return to the enormous number of useless drugs and methods that preceded the age of "therapeutic nihilism." The object of good pedagogy is to develop a mental habit,[6] and in the matter of therapeutics the future physician must also develop an emotional habit. He must constantly think of what he can do to prevent, alleviate and cure whenever these opportunities arise, and he must wish to organize his energies so that such measures are undertaken not only with vigor but also with dispatch. The essence of good therapy is therapeutic-mindedness, a desire to heal.

COMMENT BY DR. EUGENE F. DU BOIS

This article was submitted to Dr. Eugene F. Du Bois, the director of the division, who made the following comments:

This is an example of what happens when you hold casualty conferences and expose all of your diagnostic mistakes in public. The junior members of the staff, having had a taste of blood, turn and rend our therapeusis, which, though always vulnerable, is not considered fair game. The trouble is that the younger men are so skeptical that they are even skeptical of medical skepticism.

When I first saw Dr. Reznikoff at work with his pile of charts I realized with much apprehension that "there was a chiel amang us, takking notes." And such disconcerting notes finally came forth. They shocked me and I trust that they will shock every member of the staff. The experience is salutary.

Therapeusis in our clinic probably began to get worse as we devoted more and more time to therapeutic research. It became ridiculously easy to show that some of our most trusted drugs, serum and diets were utterly worthless. The one therapeutic measure which stood the test of time was rest in bed. The visiting physicians take delight in demonstrating to the interns the typical digitalis effect that can be obtained by putting the decompensated cardiac patient to bed and withholding all medications. The interns take delight in showing us untreated pneumonia patients whose temperature dropped to normal on the third day of disease without the use of serum. Our therapeutic-mindedness has been replaced by the spirit of skepticism and, as Dr. Reznikoff has shown, this particular spirit cures no headache and does little to alleviate pain in the belly.

4. Du Bois, E. F., and Reznikoff, Paul: The Clinical Clerkship in Medicine, J. A. M. A. **87**: 642 (Aug. 21) 1926.

5. B and C is a mixture of chloral hydrate and potassium bromide usually made to contain 15 grains in each drachm. R and S is Mistura Rhei et Sodae.

6. Du Bois, E. F.: On Certain Courses Not Listed in the Medical Curriculum, Science **59**: 53 (Jan. 18) 1924.

THE EFFICIENCY AND SAFETY OF THE PREVENTION OF GOITER *

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In this paper I am concerned only with the two points emphasized in the title; namely, the efficiency and the safety of the prevention of endemic goiter. The experimental studies of Marine and his associates gave us the fundamental principles of prevention, which may be summarized briefly as follows:

(*a*) Endemic goiter is a deficiency disease.

(*b*) The enlargement of the thyroid which is termed goiter is a compensatory hypertrophy due immediately to an iodine deficiency.

(*c*) Iodine deficiency may be absolute or relative; i. e., the result of an insufficient intake for normal body requirement or of an increased requirement because of growth, development, pregnancy or infection. In either case there is insufficient iodine available for the thyroid to maintain its normal iodine balance.

(*d*) The normal thyroid contains from 1 to 5 mg. of iodine per gram of dried gland. When the iodine content falls below 1 mg. per gram, cellular hypertrophy and hyperplasia begin and continue to the point of exhaustion and atrophy of the cells, or until the iodine balance is restored.

(*e*) The thyroid cells show an unusual affinity for iodine and apparently will not store up or hold significant quantities of the other heavy elements. Nor will any other gland of the body take up and store iodine in amounts comparable to the storage of iodine by the thyroid.

(*f*) The thyroid has the power to take up and store iodine from practically all known iodine compounds, whether administered by external application, by inhalation, enterally or parenterally.

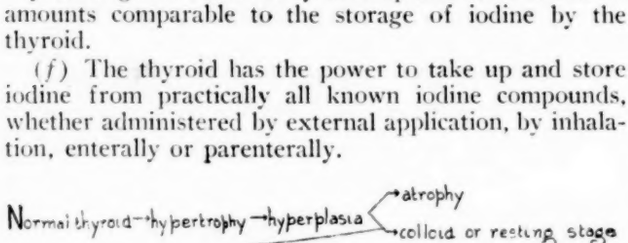
Normal thyroid → hypertrophy → hyperplasia → atrophy
→ colloid or resting stage
Colloid thyroid → hypertrophy → hyperplasia → atrophy
→ colloid or resting stage
Colloid → hypertrophy → hyperplasia → atrophy
→ colloid or resting stage

Fig. 1.—Anatomic cycle in goiter as outlined by David Marine.

(*g*) There are certain periods in the life of an individual when the functional demands on the thyroid are increased; notably, during fetal life, at puberty, during pregnancy and at the menopause. The increased demand results in a relative iodine deficiency. Pathologic conditions, such as long febrile diseases, malnutrition or chronic infections, by increasing the demands on the thyroid, may create an even greater iodine deficiency.

It is well known that in certain localities (endemic goiter districts) the amount of available iodine in food and water is low. Since 1920, this point has been more accurately demonstrated by the researches of McClendon,[1] of Young [2] of the Michigan state laboratories, and of von Fellenberg [3] of Berne, although the analysis of Chatin [4] in 1852 showed the same result.

Actual chemical analyses [1] of water in certain sections of the lower Mississippi Valley have shown an iodine content from 10,000 to 18,000 times the amount contained in water in the Lake Superior districts. Conversely there is no endemic goiter in the same districts of the lower Mississippi, while 64 per cent of the school children in the Lake Superior districts were goitrous in 1924.

The prevention of endemic goiter in man on a large scale was instituted in the public schools of Akron by Marine and myself [5] in the spring of 1917, and continued through the school years to the spring of 1920.

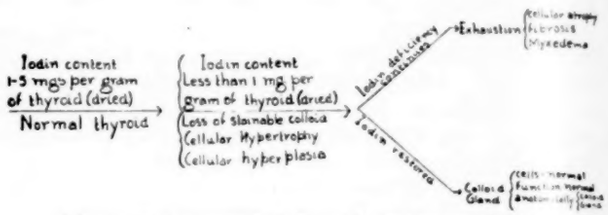

Fig. 2.—Iodine control of the cycle of changes of goiter.

The results of this study have been reported and have served to demonstrate the fact that endemic goiter can be prevented in man as easily as in animals, by keeping the thyroid saturated with iodine. The results obtained in the schools of Switzerland, reported by Klinger [6] and others, corroborate our observations. From 1920 to 1924 we tried to apply in a practical way what we had learned from our experimental work in Akron, and during this time the prevention of goiter was taken up as a state health problem by New York, West Virginia, Ohio, Michigan, Utah, Oregon and Washington. In the latter two states, the work was under the direction of the state health league.

In Michigan, goiter is endemic in every county. Because the state department of health was prepared and willing to study the problem, we have more detailed information here than in any other state. The first extensive survey was made by Dr. C. C. Slemons,[7] through the schools of Grand Rapids early in 1923, when 26,215 pupils were examined. This survey included boys and girls from the first to the twelfth grade, and the incidence of goiter was 30 per cent. In the spring of 1923 prophylaxis was started through all the public schools (not the parochial). For this purpose every boy and girl was urged to take one tablet containing 0.01 Gm. of iodine in organic combination (Chocolate Tablets Iodostarine-Roche) a week. This method of prophylaxis became very popular, and soon a high percentage of the pupils were carrying out this measure consistently. In January, 1924, the state department of health decided to carry out a definite

* Read before the Section on Pharmacology and Therapeutics at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

1. McClendon, J. F., and Hathaway, J. G.: Inverse Relation Between Iodine in Food and Drink and Goiter, Simple and Endemic, J. A. M. A. **82:** 1668-1672 (May 24) 1924.
2. Young, C. C.: Am. J. Pub. Health **14:** 508 (June) 1924.
3. Von Fellenberg, T.: Untersuchungen über das Vorkommen von Jod in der Natur,, Mitt a. d. Geb. d. Lebensmittelunt. u. Hyg. **14:** 24, 1923.
4. Chatin, A.: Recherche de l'iodide dans l'air les eaux, le sol et les produits alimentaires des Alpes de la France, Gaz. d. hôp. **25:** 14, 38, 50, 86, 94, 1852; Comp. rend. Acad. d. sc., 1850.
5. Marine, David, and Kimball, O. P.: The Prevention of Simple Goiter in Man, J. Lab. & Clin. Med. **3:** 40-46 (Oct.) 1917; Prevention of Simple Goiter in Man, Arch. Int. Med. **25:** 661-672 (June) 1920.
6. Klinger, R.: Die Prophylaxe des endemischen Kropf, Schweiz. med. Wchnschr. **51:** 12 (Jan. 6) 1921.
7. Reed, Torrance; and Clay, H. T.: A Survey of Thyroid Enlargement Among the School Children of Grand Rapids, Public Health, Michigan Department of Health **11:** 287 (Aug.) 1923.

program of iodine determinations of the water supply and at the same time to make goiter surveys in several counties. Following these studies they planned to carry out some method of prophylaxis, with resurveys to determine the efficiency of the prophylactic measures. For this detail study, in order to represent average conditions in the state, four counties were selected: namely, Houghton on Lake Superior, Wexford and Midland in the interior, and Macomb on Lake Erie, all on a line diagonally across the state from the northwest to the southeast.

Iodine determinations of every main source of drinking water in the county were made,[8] with the average of these determinations representing the iodine content of the county. In Houghton County the iodine content of water is marked "none" (fig. 3). The incidence of goiter among the total school population in this county is 58.1 per cent of the boys and 70.5 per cent of the girls.[8] In Wexford County the iodine content of water was 0.5 part per billion, and the incidence of goiter among the school children was 47.6 per cent of the boys and 63.4 per cent of the girls. In Midland County the iodine content of the water supply was 7.3 parts per billion, and the incidence of goiter in this county was 24.4 per cent of the boys and 41.1 per cent of the girls. In Macomb the iodine content of the water was 8.7 parts per billion, and of 10,258 school children examined 20 per cent of the boys and 32 per cent of the girls had goiter.

From this study it is apparent that the incidence of goiter in any county is inversely proportional to the iodine content of the water supply.

Immediately following this survey, a state-wide campaign by the state department of health was made to emphasize the fundamental causes of endemic goiter and the principles of its prevention. In the spring of 1924, a special committee was appointed by the state medical society to work with the state department of health in carrying out this work. These two groups, representing the medical profession of the state, cooperated with the Wholesale Grocers' Association and the Salt Manufacturers' Association to the effect that, beginning May 1, 1924, the salt manufacturers produced and put on the market throughout Michigan an iodized salt containing one part of potassium iodide to 5,000 parts of salt. The wholesale grocers did everything they could to bring about the sale of this salt only, and the state department of health was responsible for advising the public to use it.

The minimal amount of iodine needed in this endemic goiter district has never been determined. The Swiss Goiter Commission in February, 1922, recommended an iodized salt containing one part of potassium iodide to 200,000 parts of salt. This would give an average of from one-third to one-half grain (21 to 32 mg.) of potassium iodide, or from 15 to 20 mg. of iodine yearly. This amount was thought to be entirely inadequate, so the state health department advised the amount that was being used through the schools in this country; namely, 400 mg. of iodine a year. This is the amount a child gets from one organic iodine tablet (10 mg. of iodine) a week for forty weeks (one school year). The average person uses 7½ pounds (3.4 Kg.) of salt a year. Therefore one part of potassium iodide to 5,000 parts of salt will give each person 10 grains of potassium iodide, or 400 mg. of iodine.

8. Olin, R. M.: Iodine Deficiency and Prevalence of Simple Goiter in Michigan, Michigan Health Rep. 21, May 10, 1924; J. A. M. A. 82: 1328 (April 26) 1924.

THE RESULTS OF PREVENTION IN SCHOOL CHILDREN

The method of determining the efficiency of this prophylaxis was by reexamination of school children in the same counties where examinations were made in 1924, after they had used only iodized salt for approximately four years. For practical reasons the counties of Macomb and Houghton were not included in the restudy in 1928; therefore only the following results are given:

1. In January, 1924, 3,645 school children of Midland County were examined and at that time the incidence of goiter in all children was 41.6 per cent. In January, 1928, a resurvey of the city of Midland alone was made. It was found that in 91 per cent of the homes of the public school children iodized salt had been used continuously since May, 1924. A total of 984 children were examined. This included boys and girls from the first to the twelfth grades. In this survey only eighty-eight enlarged thyroids were found, or an incidence of 8.8 per cent. Even this marked drop

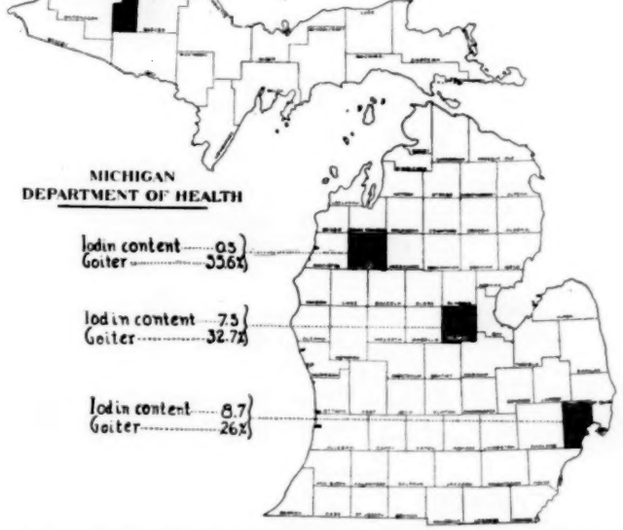

Fig. 3.—Goiter survey of school population: iodine in water estimated in parts per billion.

in the incidence of goiter over a period of four years does not tell the whole story. Having made this survey myself, I can say that all but twelve of these eighty-eight goiters were small, firm adenomas (most probably of a congenital type) with the remainder of the thyroid normal in size. Twelve, however, were definite hyperplastic goiters, typical iodine deficiency glands. Of eighty-nine children who had not used iodized salt in the home, eleven, or 12.5 per cent, had hyperplastic goiters, while of the 900 who had used iodized salt continuously for three years, only one, or 0.1 per cent, had goiter. This case was most remarkable and was studied in some detail. A 17 year old boy, 6 feet 2 inches (188 cm.) tall, had grown almost a foot during the past year. During this time he had developed a goiter, in spite of the fact that he had been using iodized salt continuously. This case emphasizes that the iodized salt will not meet such emergencies as unusual growth. A severe or chronic infection might also make such an unusual demand on the thyroid.

2. An examination of all school children in Wexford County was made in January, 1924. Of 3,984 pupils

examined, 55.5 per cent were goitrous. In January, 1928, reexamination of all the schools in the city of Cadillac (the county seat) was made. Of 1,553 children examined, only 17.3 per cent had goiter.

3. In the spring of 1923 the whole school population of the city of Grand Rapids was studied. There were 26,215 pupils examined, with a total goiter percentage of 30. In 1928, 39,435 were studied in the resurvey, when the total percentage of goiter was 9. Here, again, only half the truth is told, even in this marked reduction from 30 per cent to 9 per cent in four and one-half years. As stated earlier in this paper, the parochial schools did not participate in the program of prophylaxis as carried out in the public schools by the use of one organic iodine tablet a week from 1923 to 1926. Also, comparatively few of the families had been using iodized salt in the home. In contrast, 91 per cent of the homes of the public school children were using iodized salt. Quite unintentionally, we had carried out an experiment which again emphasized in no uncertain

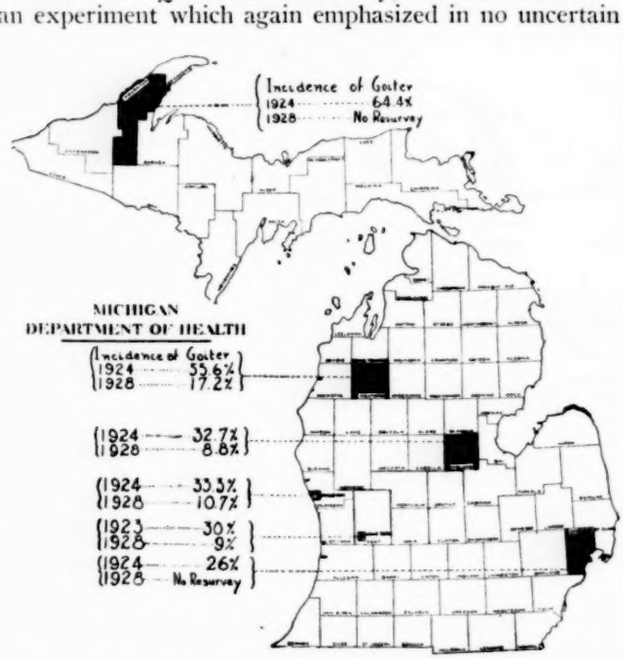

Fig. 4.—Incidence of goiter in 1923 and 1924 and in 1928: School children examined in 1923 and 1924, 65,537; incidence of goiter, 38.6 per cent. School children examined in 1928, 50,134; incidence of goiter, 9.9 per cent.

terms the efficiency of our prophylactic measures. In five parochial schools the adolescent boys and girls, from the sixth to the twelfth grade, inclusive, showed the same percentage of goiter as was found through all the schools in 1923; 42 per cent of the girls and 31 per cent of the boys had goiter, a total incidence of 36.5 per cent. In contrast, the same age groups (junior and senior high schools) of the public schools showed a total incidence of goiter of 18.1 per cent. We examined 4,234 boys and girls from the first to the twelfth grade in the five parochial schools, of which number 1,032 had goiter, or a total incidence of 24.3 per cent, while, of the whole school population of 39,435, only 9 per cent had goiter.

In examining the children of the parochial schools, especially the adolescent boys and girls, we found hyperplastic goiters in approximately the same proportion that we had found in our earliest surveys. These are active hyperplasias due to an iodine deficiency. Of the 1,032 goiters in this parochial school group, 14 per cent were hyperplastic. Among the public school groups, we rarely found such a gland, and we feel sure that, had it been possible to study each of these, we would have found that they were among the 9 per cent who had never participated in the prophylaxis; or they would have shown some unusual thyroid demand, such as was described earlier in this paper.

A survey through the public schools in 1926 revealed the fact that 91 per cent of the homes were using iodized salt continuously. The use of the organic iodine tablets was stopped, therefore, and the general use of iodized salt in every home was advised.

4. The study at Muskegon, through the same period of years and under similar conditions, was made by Dr. F. B. Marshall,[9] who used the same standards and classifications. In 1924, 7,710 school children were examined; of these 2,570 (33.3 per cent) had goiter. In 1928 he examined 8,250, of whom 887 (10.7 per cent) had goiter.

Altogether we saw seven cases of hyperthyroidism in children, four in the resurvey of 50,134 school children and three in the special goiter study of adults. One at Midland used iodized salt after the hyperthyroidism was well established and during the same time she was taking compound solution of iodine on prescription as treatment for the hyperthyroidism. The three seen in Grand Rapids were in the parochial schools, and it was established beyond doubt that they had never used any iodine either as prophylaxis or as treatment.

Of the three children seen during the special study of adults, the first, a girl, aged 8, in Grand Rapids, had definite exophthalmos, and other symptoms at the age of 5, and it was one year later that the family started to use iodized salt, thinking it might help her goiter. She was also taking iodine drops (compound solution of iodine) from her physician throughout the same period. The second, a girl, aged 16, seen at Houghton, has had a severe hyperthyroidism since the age of 12, at which time she was in bed for six weeks with the same symptoms she has at present. She has been using iodized salt for two years, yet her hyperthyroidism has existed for four years. The third patient, a girl, aged 14, seen at Trimountain Hospital, Houghton County, was one of a family of seven in which each had a large congenital goiter. The mother also had a large goiter. They have used iodized salt in this home for four years continuously, and two years ago this child developed a severe hyperthyroidism with marked exophthalmos. The family physician stated that the symptoms at first were those of chorea, coming on at the beginning of puberty (age 12) and followed by the development of hyperthyroidism. He felt that puberty and infection were the forerunners of hyperthyroidism in this case, and that the iodized salt could not possibly have been a factor. However, since she had used iodized salt previous to the onset of symptoms she is classed with those (class 1) in whom iodine might have been a factor in producing the disease.

Each of these seven children had a large multiple adenomatous goiter with a persistent thyroglossal stalk. We did not see any cases of hyperthyroidism in children without a previously existing congenital goiter, and therefore conclude that the hyperthyroidism is only a part of, or resulted from, the endemic goiter. McClendon,[1] from the Draft Board statistics, has shown that the incidence of exophthalmic goiter throughout the United States is proportional in every locality to the incidence of endemic goiter. We appre-

9. Personal communication to the author.

ciate the fact that hyperthyroidism is sometimes seen without any preexisting thyroid abnormalities; yet in these seven children we feel that the hyperthyroidism could have been prevented by keeping the thyroid gland histologically normal. They serve, therefore, to emphasize the importance of a method of prophylaxis which includes fetal life, early childhood, adolescence and pregnancy—briefly, the entire period of growth and development.

We are privileged to report here the observations of the physicians of Houghton County doing obstetrics and pediatrics. The report [9] was given by Dr. W. A. Mauthei of Lake Linden, who states that before prophylaxis became general it was not at all uncommon to see babies with definite goiters at birth. He and his associates discussed this fact and looked forward with eagerness to see whether the general use of iodized salt, or iodine prescribed throughout pregnancy, would change this condition. To date they have not seen a single case of congenital goiter when the mother has used iodine. From their observations so far the continued use of iodized salt has been found sufficient; yet many prescribe additional iodine during this period, such as 1 grain (0.065 Gm.) of sodium iodide or one or two organic iodine tablets a week.

We have now the accumulated data of many thousands of children, both in this country and in Europe, who have carried out prophylaxis of goiter for years under the careful supervision of physicians. There has never been a case of hyperthyroidism reported in which those in charge felt that hyperthyroidism was brought on by the prophylactic measure, and judging from the literature on this subject it seems to be universally accepted now that there is no possibility of producing the disease *in children* by the continuous use of iodine in amounts sufficient to prevent goiters.

THE EFFECTS OF IODIZED SALT ON ADULTS WITH GOITER

There are many statements in medical literature to the effect that iodine, even in such small amounts as are present in iodized salt, induces hyperthyroidism in adults with goiter. None, however, are based on sufficient scientific data to be of much value. Coindet,[10] who was the first to advise iodine in the treatment of goiter in 1820, also noted bad effects and urged precautions in this treatment in 1821. Gairdner [11] gave a classic account of this condition in 1824. Rilliet [12] of Geneva was the first to stress the possibility of harm from the use of iodized salt. He read a paper on this point before the Academy of Medicine at Paris in 1858, in which he describes four cases, typical of what is seen today and commonly called toxic adenoma. They had been using potassium iodide in their cooking salt to the amount of one part of potassium iodide to 10,000 parts of salt. The author is not clear in this paper as to the relation between the use of iodized salt and the duration of the symptoms of toxic goiter. He also describes two patients who had left the mountainous region of Geneva and had gone to the seashore, and, breathing the sea air which is heavily laden with iodine (according to the theories at that time), had become as toxic as the two patients who had used the iodized salt. M. de Boinet [13] wrote a letter to the commissioners of the academy, Messrs. Chatin and Trousseau, in which he points out the fallacies and dangers of the deductions by Rilliet from such a small number of cases. He doubts the statement that iodine in the sea air would be sufficient to cause such immediate toxicity and prefers to believe that the condition was already present and brought out by some other factor than such minute quantities of iodine. He feels, too, in view of the large number of goiters that were being treated by Rilliet and his many friends, and from a country where goiter is so prevalent, that there should be more than two cases affected by this treatment. However, Rilliet's warning note as to the possible dangers of the use of even small amounts of iodine in the treatment of goiter carried much more weight than the logical deductions of de Boinet. The medical profession immediately stopped the use of iodized salt which had been started by M. Grange of Geneva in 1840.

The disease which Rilliet recognized and attributed to the use of food iodine continued to develop even though the food iodine was stopped. By 1900 toxic goiter had become one of the common diseases and with progress in the surgery of the thyroid there has been a steadily increasing number of articles on goiter, its cause and treatment. In 1900 Dr. Breuer [14] of Nothnagle's clinic described what he thought was iodine Basedow. In 1910 Kocher [15] set forth at length the untoward effects of iodine in exophthalmic goiter. In 1911 Marine and Lenhart [16] reported the use of iodine in exophthalmic goiter. They carefully followed seventeen cases and did not see any of the injurious effects commonly reported. They advised amounts of iodine sufficient to meet the physiologic needs. In extreme cases they used syrup of ferrous iodide in doses of 5 minims (0.3 cc.) daily for the first week; then 5 minims (0.3 cc.) twice daily the second week and 10 minims (0.6 cc.) twice daily the third week. In mild cases the initial dose might be 5 or even 10 minims twice daily. In criticizing Kocher's work they said: "We believe such effects are due to the abuse and not the physiological use of the drug."

Surgeons were not convinced by the apparent safety with which Marine and Lenhart used iodine in physiologic amounts in hyperthyroidism, so they continued to teach that iodine should not be given in any case of hyperthyroidism and very cautiously to any adult with an adenomatous goiter, for fear of starting hyperthyroidism. Many attempted to restrict their patients to an iodine free diet. Plummer [17] was the first to advocate the use of iodine in large amounts to control severe hyperthyroidism. Since the advent of this measure in 1924, surgery of the thyroid has undergone tremendous changes. Practically every surgeon now uses large amounts of iodine as a preoperative measure to control, temporarily, the hyperthyroidism and to make the operation safe, and as a postoperative measure for several months to prevent thyroid hyperplasia.

During the past three years there have been many articles in the medical and nonmedical literature emphasizing the dangers of the use of iodized salt. We cannot find any scientific study on this point in the literature

10. Coindet: Nouvelles recherches sur les effets de l'iodide et sur les precautions de suivre dans le traitment du goitre par ce nouveau remède, Ann. de chim. et phys. **16:** 262-268, 1821; Decouverte d'un remède contre le goitre, ibid. **15:** 49-59, 1820.
11. Gairdner: Magendie's Formulery, 1824.
12. Rilliet: Quelques mots sur l'intoxication produite par l'iodide administré en petites doses longtemps continués, Bull. de l'Acad. imperial de. méd. **24:** 23-27, 1858-1859.
13. De Boinet: De l'alimentation iodée, Bull. de l'Acad. Imperial de méd., Oct. 26, 1858.
14. Breuer, F.: Beitrag zur Aetiologie der Basedowschen Krankheit und des Thyroidismus, Wien. klin. Wchnschr. **13:** 641, 671, 1900.
15. Kocher: Arch. f. klin. Chir. **92:** 1166, 1910.
16. Marine, David; and Lenhart, C. H.: Pathologic Anatomy of Exophthalmic Goiter, Arch. Int. Med. **8:** 265-316 (Sept.) 1911.
17. Plummer, H. S., and Boothby, W. M.: J. Iowa M. Soc. **14:** 66 (Feb.) 1924.

from the time of Rilliet to the present, and recent articles have added to the confusion by mentioning only the few patients with hyperthyroidism who had used iodized salt, saying nothing about the vastly greater number of patients with hyperthyroidism seen during the same period who had not used it. To answer this question with scientific data was the purpose of the study now presented. To understand the goiter problem we must study it as a whole, and not just a few isolated goiters. To this end we arranged to study the whole goiter population in several counties of

MICHIGAN STATE HEALTH DEPARTMENT
SPECIAL GOITER STUDY

CLASS 1
NAME Mrs. Ulric Barrett ADDRESS Lake Linden, Michigan
AGE 45 FAMILY HIST. S.2. Bro's Goiter GOITER SINCE 10 years
SYMPTOMS SINCE None NERVOUS Yes SLEEPING Well
PALPITATION No DYSPNOEA No FATIGUE No
USUAL WT. 119 PRESENT WT. 130 APPETITE Fair PULSE 78 R.R. BL. P. 130-80
THYROID Moderate size multiple adenoma + persistent thyro-glossal stock
DIAG. Normal thyroid function
HOW LONG HAVE YOU USED IODIZED SALT? 4 years continuously
OTHER PREPARATIONS OF IODINE? None
REMARKS 10 children

Fig. 5.—Record card used by Michigan State Health Department in special goiter study.

Michigan where the incidence of goiter is comparatively high and the majority of the population has been using iodized salt for the past four years.

Through the state department of health we interested the county medical societies in such a study, and where there was no county health department the whole survey was arranged by the medical society. The first study was arranged by the Wexford County Medical Society, meeting at Cadillac, Dec. 15, 1927. It was announced in the newspaper that a goiter clinic for adults would be held by the state department of health and the county medical society. Every adult who had goiter was urged to come in and receive a careful study of his goiter with diagnosis and suggestion for treatment. Also, each physician called up his goiter patients and advised them to come to this study and to bring any friend or neighbor who had a goiter problem. The next study was held at Grand Rapids, from February 10 to 16, inclusive, and the third in Houghton County, from April 23 to 26, at Calumet, Hancock, Trimountain, Lake Linden and Houghton.

A most valuable phase of this study was the cooperation and active participation by the local physicians. Our statistics are much more valuable because of the fact that in more than half of the cases studied the family physician was there to give us the previous history both as to the onset of symptoms and as to the medication.

This study was made to determine whether iodine in any amount, and especially in amounts used in the prophylaxis of goiter such as iodized salt, could be an etiologic factor in the production of hyperthyroidism. Our classification was based entirely on the relation of the onset of the disease to the use of iodine. That is, if a patient had been using iodized salt for six months and had had definite symptoms of hyperthyroidism for a year, he was classed as not having used iodized salt since he had not used it previous to the onset of hyperthyroidism. We found it necessary to make four distinct classes and to classify each patient before dismissal.

Class 1 comprises patients who have used iodized salt alone for a period of from one to four years. Of those in class 1, 88 per cent have used iodized salt continuously for four years and 12 per cent have used it at least one year.

Class 2 includes those who have used no iodine, or at least none before the development of hyperthyroidism.

Class 3 consists of those who have used iodized salt continuously but have also used other forms of iodine, such as external applications or compound solution of iodine.

Class 4 comprises those who took iodine on prescription or otherwise but had never used iodized salt.

The fact that approximately three fourths of the people of Michigan are using iodized salt forms the basis of an excellent experiment. While studying a group that has used iodized salt for a period of years, we also have a group which purposely or otherwise has not used iodine in any form. All are adults with goiter, many of which are large adenomatous goiters of long standing. A brief history was recorded in each case and a copy was left with the county medical society or the county health department for the benefit of the local physician. A copy was also sent to the state department of health for study. A concise summary of the 1,229 cases studied is found in the accompanying tabulation.

We find in class 1 that twenty-seven of a total of 655 developed hyperthyroidism after the use of iodized salt had been started. In many of these cases we found other conditions that seemed more important in the etiology of hyperthyroidism than the use of iodized salt. For instance, three patients developed exophthalmic goiter during pregnancy, two immediately after severe throat infection, and several after severe nerve strain or shock such as is so often seen as a forerunner of this disease.

Summary of Cases Studied

	Class 1	Class 2	Class 3	Class 4
Number of cases studied	655	419	114	41
Number of cases of hyperthyroidism	27	233	20	8
Percentage of hyperthyroidism	4.1	55.5	17.5	20.0

In class 2, 419 were examined who had not used iodine, or at least had not used any previous to the onset of definite symptoms of hyperthyroidism. We have here exactly the same factors that we have in class 1, except that those in class 2 have not used iodine; yet the percentage of cases of hyperthyroidism is 55.5, compared to 4.1 of cases in which hyperthyroidism developed in class 1. This difference suggests that iodine in amounts sufficient to keep the thyroid normal histologically will thereby keep it normal functionally and actually prevent hyperthyroidism.

In class 3, we find that 17.5 per cent of those examined have hyperthyroidism and in class 4, 20 per cent. At first it would appear that it was the amount of iodine they were getting which caused the increase over that in class 1, but from studying the cases carefully I am sure that this apparent increase is due to the time element alone and not to the amount of iodine taken. Most of these patients have been using iodine externally as

the tincture, a proprietary iodine ointment or iodized oil, or the iodides internally, for as long as ten years; so long that it would be impossible to say in any case that the symptoms of hyperthyroidism preceded the use of iodine. For instance we saw three women at Cadillac, two of whom had used 15 grains (1 Gm.) of potassium iodide, and the other 5 grains (0.3 Gm.) of sodium iodide daily for ten years. All had adenomatous goiters and two were taking iodine as treatment for goiter, while the third took it as treatment for hypertension. None had symptoms of hyperthyroidism, yet their thyroids were as firm as those described by Breuer in his description of iodine Basedow. One woman seen at Grand Rapids had rubbed into her goiter (one adenoma was 6 inches in diameter) a copious amount of iodized oil daily for the past ten years without apparent harm. Several patients had taken compound solution of iodine (from 10 to 30 drops daily) for as long as twelve and eighteen months without apparent ill effects. Yet twenty-eight of 155 who had used iodine in large amounts over a long period showed hyperthyroidism.

At a meeting of the Wexford County Medical Society held just after the study at Cadillac, where practically every physician participated in the study, the members voted unanimously to send word to the state department of health that they had never seen a single case in which they could say that iodized salt had induced or injured a case of hyperthyroidism. The same sentiment was expressed by the men of Houghton County at a meeting following the study. The meeting of the Kent County Medical Society was held before the study was made and therefore no expression was given.

Studying the goiter problem of a whole community, we are impressed by the number of cases in which hyperthyroidism has developed on a long standing adenomatous goiter. A relatively high proportion of these show what Marine,[5] Graham and others consider evidence of congenital goiter: a persistent thyroglossal stalk or a fetal adenoma. This type of case has long been called toxic adenoma, but as Graham [18] has recently emphasized, the difference between it and acute exophthalmic goiter is one of degree not of quality. And, further, it is most remarkable the length of time that many of these patients will go without diagnosis or treatment. Many of them have never even sought medical advice. It is not at all uncommon to have them state that the symptoms have existed for six, eight and even ten years.

SUMMARY

From my observations of all adults with goiter who came for study in three different communities, I feel sure that there is no basis for the statements that iodized salt might induce hyperthyroidism in long standing goiters. By study and comparison of the twenty-seven cases of hyperthyroidism, or 4.1 per cent of those who had used iodized salt and later developed the disease, with the larger number, 233, or 55.5 per cent of those who had not used iodine yet had developed the same condition, I feel that the etiology of hyperthyroidism lies within the individual. I also feel that these etiologic factors are increased or aggravated by endemic goiter, and by preventing endemic goiter we are thereby preventing, in the future, many cases of hyperthyroidism.

This is the beginning of an extensive study which has been outlined by the Michigan State Department of Health to establish the truth of the situation. From studies made thus far the prophylaxis of goiter as it has been carried out in Michigan would appear to be very efficient and entirely safe.

Hanna Building.

18. Graham: Exophthalmic Goiter and Toxic Adenoma (Clinical Variations of a Single Disease), J. A. M. A. **87**: 628-631 (Aug. 28) 1926.

ABSTRACT OF DISCUSSION

DR. J. F. MCCLENDON, Minneapolis: In 1909, while on the staff of the department of pathology of Cornell University Medical College, I noticed that goiters in persons coming from goitrous regions to the sea coast and eating sea food became reduced in size. Some of these persons ate the thyroid tissue from fish. In Minnesota, I am able to show not only that sea food was high in iodine but that land plants from the New England Coast contained about ten times as much iodine as Minnesota foods of the same species. It seemed to me that it would take forever to carry on this study for all foodstuffs, and since the iodine of the plants was obtained from soil water, I made a survey of the water and was able to show that the water in goitrous regions contained much less iodine than in nongoitrous regions. Since then, aided by a grant from the Mayo Foundation, we have been making a survey of butter, which is one of the foods high in iodine content, and we found that the butter of Minnesota contains only about 15 or 20 mg. of iodine per ton, whereas a sample from a nongoitrous region is richer in iodine. Dr. Hathaway and I showed that a Minnesotan not presenting a goiter was taking only 0.02 mg. of iodine a day in food and drink. About 50 per cent of Minnesota school girls show a distinctly enlarged thyroid; 10 per cent of them show an enlargement at the age of 20. The girls showing a goiter at school age have a basal metabolism of minus 15 per cent at 20. Although these girls do not show any signs of myxedema, they are not physiologically normal, and they are benefited by the administration of thyroid. Many of them have taken iodine without having it raise the basal metabolism. It is too late at 20 to reduce these hypothyroid symptoms with iodine, and thyroid itself must be given.

DR. J. NEWTON HUNSBERGER, Morristown, Pa.: I have practiced all my life in a section that is not particularly known as a goiter belt. In the upper part of the state of Pennsylvania is a belt where goiter is rather prevalent. I want to ask Dr. Kimball what his experience has been as to heredity. Some years ago I saw a woman with eight daughters, all of whom had goiters. Since then I have seen many cases of mothers who had goiters and passed them on to their children. This matter seems to me to be of a great deal of importance. Probably heredity does not play any rôle, but I should like to hear what Dr. Kimball has to say about it.

DR. G. H. LUEDTKE, Fairmont, Minn.: This year we made a survey of the goiter situation in our county, examining about 3,000 children. We found that between the ages of 13 and 16 goiter was present in 40 per cent, a somewhat larger number of girls than boys being affected. Between the ages of 6 and 12, goiter prevailed in from 10 to 12 per cent.

DR. JANE KENNEDY, Minneapolis: For twelve years I examined the women entering the University of Minnesota. We studied the incidence of goiter or enlarged thyroid. We found that one out of every four—some years, five—had some enlargement of the thyroid gland. These women entered the university between the ages of 16 to 20, usually at 18. We found that at the end of the time 75 per cent of that enlargement disappeared. Dr. Charles Mayo was my consultant many times. We did not institute any treatment; it was not done at that time. We were afraid of iodine. I have in mind a few young women who showed hyperthyroidism whose parents did not believe in medication. They had prominent symptoms. I began to give them iodine with fear and trembling. Seventy-five per cent had become normal by the time they were graduated, without medication.

DR. SIMON LEVIN, Houghton, Mich.: I have had opportunity to know the number of cases that we have had in our section. A survey made in 1920 and 1921 of the entire population showed that goiter was present in about 66 per cent of the persons examined. It was startling at first but nevertheless absolutely true. In one section that Dr. Kimball covered, among 1,783 persons, 1,300 had goiter. Most of the cases that

occur in adolescence do not disappear by the age of 20, unfortunately, because the curve of incidence of enlarged thyroid is greatest at 17. The proportion occurring at that age was 88 or 89 per cent. Furthermore, 15 per cent of the infants at birth had enlarged thyroids. On the advice of Drs. Marine and Kimball, the state of Michigan instituted the prophylactic use of iodine. The amount of iodine given is so small that it could do no harm. What it has done, without doubt, has been to decrease the number of cases of enlarged thyroid most marked in the adolescent, and in only a small proportion of them could one find any hyperthyroidism or exophthalmic goiter due to the small amount of iodine given. The proportion in this neighborhood is from 4 to 6 or 7 per cent. Many of these patients had an early history of exophthalmic goiter, or they had thyroid temperaments, the latter being quite common. We have more exophthalmic goiter in our section than is found elsewhere, a great many enlarged thyroids and disturbed function of the thyroid gland also being quite common. Some one said that it was necessary to use thyroid and thyroxin as a treatment for the adolescent goiter. I would caution against the free use of thyroxin and thyroid extract. We have seen many quiescent cases of adenomatous goiter that have flared up—becoming active. The indiscriminate use of thyroid extract and thyroxin will cause a great deal of harm that may not always be overcome by the removal of the thyroid. The proportion of adenomatous goiters surgically cared for was 48 per cent. There are many cases of quiescent and of low-grade toxic goiter in the goiter district.

Dr. Henry S. Plummer, Rochester, Minn.: It is my opinion at the present time that small doses of iodine contained in salt are not materially increasing the incidence of hyperthyroidism in adults who have adenomatous goiters. I don't think that iodine is the only factor in the etiology of the goitrous conditions. In general, I say that I don't understand them at all, but at various times I have tried to point out the physiologic relations present. I don't believe in much of the teaching that is being done. Tremendous mistakes are made by assuming that hypertrophy of the thyroid gland is the cause of hyperthyroidism.

Dr. O. P. Kimball, Cleveland: In answer to Dr. Hunsberger's question in regard to heredity: We do not see, in our endemic goiter district, anything that could be called hereditary goiter or any conditions inherited from a previous goiter. In the older and more severe endemic goiter districts, there are conditions, such as deaf-mutism, cretinoid states and cretin idiocy, that have long been considered as hereditary, due directly or indirectly to endemic goiter. The best known districts are parts of Switzerland, sections in the Himalayas, and the Peruvian plateau. The defects we see are congenital in origin. Dr. Kennedy states that in college girls under her observation goiter disappeared by the age of 18 or 20 without any treatment. There is a natural tendency for a simple goiter to disappear after the demands of puberty and rapid growth have passed. However, in the upper peninsula of Michigan, before the general use of iodized salt was started, our observations were different. We found that the majority of these goiters remained practically the same or slightly decreased in young womanhood, only to enlarge again during the child-bearing period. As to Dr. Waller's question of why some children in a family have goiter while others from the same mother do not, it might be said that the relative deficiency which causes goiter during one pregnancy may not exist during the next pregnancy. However, it has been observed in our domestic animals that one or two of a litter of pigs would be typical cretins with others of the same litter perfectly normal; or there would be a cretin lamb with a large goiter while its twin would be perfectly normal. These conditions are hard to explain, but they must be the result of a relative deficiency. Marine produced a definite hypothyroidism in dogs by partial thyroidectomy and careful elimination of iodine from the diet. This deficiency was maintained throughout pregnancy and each of the pups had a goiter at birth. The same mother, through another pregnancy, was given iodine, so that the thyroid remained normal in size and function and each of the pups had at birth a normal thyroid. From these experiments as well as all of our observations, I feel that congenital goiter is due to a relative deficiency of iodine, and could be prevented.

THE MIDWIFE PROBLEM *

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I shall confine my remarks on the midwife problem to that of the midwife as we find her in the Southeast. The problem is therefore one that is peculiar to our section, as practically all midwives are negroes who have reached middle age or over. They are, as a rule, ignorant and superstitious, having absorbed many things from the traditions of the race. Most of them are unable to read; consequently, teaching them is a slow process. I shall deal with Georgia figures, but the same conditions very likely prevail in all of the Southern states.

In area, Georgia is the largest state east of the Mississippi, with 58,725 square miles and a population of 3,171,000. There was a maternity death rate of 11.6 in 1924; the first quarter of 1928 showed a rate of 8.5. The state is composed of 161 counties, in several of which there are no physicians. The physicians in rural sections are few. In 1925, the American Medical Directory listed 3,122 physicians; in 1927, 2,935, a net loss of 187.

The mailing list of the state board of health is made from the American Medical Directory. Of the letters mailed to this list, 255 were returned on account of death, change of address or some other cause. This number, added to the decrease in the list, makes a total loss in two years of 442 physicians. This list does not exclude physicians too old to practice, the men in public service, health officers, or those who for any cause have retired, so it does not give a true picture of the number of physicians in active practice. It is quite likely, therefore, that the total of available physicians is around 2,000.

A further analysis shows that the six large centers of population, Fulton, DeKalb, Chatham, Richmond, Bibb and Muscogee counties, have 925 physicians. The combined area of these counties is 1,658 square miles, and the population 598,711. Outside of this area of dense population there are 1,755 physicians and 2,460,559 people over an area of 57,067 square miles, according to the 1920 census. From this analysis it is apparent that the city physician serves only 647 people, while the country doctor has an average of 1,402.

The loss from death per annum is almost twice the number that are graduated from our two medical colleges. This in itself gives an insight into the problem that if not serious now will prove so as time goes on.

Some have advocated the lying-in hospital as a solution of the midwife problem. Georgia has only 4,200 beds for all purposes. The erection of hospitals for this specific purpose is neither feasible nor practicable.

When the funds under the Sheppard-Towner law became available it was realized that an opportunity was offered to inquire into and do something for the midwife problem. The state had never provided any funds for this purpose, nor has it done so yet. The legislature made $5,000 available toward matching the $19,530.55 that awaited the state on demand after compliance with the regulations. The state medical association, on having the matter brought to its attention,

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

requested by resolution that the state board of health take up the problem of the regulation and instruction of midwives. After conference, the council of the Georgia Medical Association adopted a short code, and this was referred to the state board of health at its annual meeting, Jan. 28, 1925, and adopted as proposed. Immediately the work of instruction was undertaken. In 1924, a roll of the midwives known to be practicing was compiled. The number found was 2,675. It is believed, however, that there are over 5,000 in the state. By Jan. 1, 1928, 4,661 had been located. From August, 1924, to Jan. 1, 1928, 2,471 had been certified, and there were 1,529 who had failed to qualify, leaving 661 uninstructed.

The midwife to qualify must attend a school of instruction of ten periods; and to pass a satisfactory examination, she or he (there are a few men midwives) must have a negative Wassermann reaction and be vaccinated against smallpox. They must agree to abide by the rules and regulations as promulgated by the state board of health, and report promptly all births to the local registrar.

The law requires that 1 per cent of silver nitrate be put into the eyes of each baby immediately after birth; this solution is furnished by the state board of health free of charge. The board has distributed 89,357 ampules for that purpose.

The follow-up work of these midwives has been quite a problem, and to take the place of the nurse the questionnaire has been adopted for this purpose. The certificate, which is issued for only a twelve-month period, of course must be renewed. In 1926, 795 questionnaires were sent out and of these 111 were not returned. In 1927, 1,151 were sent out and of these 206 were not executed and returned. Failure to return the answers in most of the cases was due to death and the nondelivery of the mail. Many midwives move possibly two or three times a year; many of them do not get mail oftener than once a week, and many of them have several names. It is thought that under these circumstances the percentage of returns is remarkable.

The lessons prepared and used are of the simplest kind, following closely the syllabus of Dr. I. R. Whipper. Most of the teaching consists in telling them what not to do and when to send for a physician. Each midwife is required to have a proper bag for the protection of her supplies, and just what she shall carry is prescribed. They are required to demonstrate before the class how they would do certain things. They are required to memorize the birth certificate. The certificate that they receive is signed by the local registrar of vital statistics of the district in which the midwife lives, bringing her in contact with him, by the instructor and by the commissioner of health under the seal of the state board of health, after a Wassermann test has been made and the vaccination done by a physician, and the certificate of freedom from disease is made by him. This briefly outlines a few of the conditions and requirements.

Every one who is not informed asks the question, "Why a midwife at all?" The fact that 20,794 babies were delivered by midwives in Georgia in 1927, of which number 19,384 were live births, shows conclusively to my mind that the midwife is necessary. This represents 31.4 per cent of the total births. She is doing business and under present conditions is indispensable.

In 1927 there were 65,475 births, of which 3,839 were stillbirths. Of the stillborn 1,410 were delivered by midwives, or 36.7 stillbirths chargeable to them. When one considers the part syphilis plays in the stillbirths and the infection that prevails in the class of people who call the midwives, their showing is most creditable.

The foremost questions are what is best to do for her and how to do it; also how best to protect those who use her service. In her present condition, she is not desirable as an accoucheuse. The problem as I see it is to educate her as best we can in personal cleanliness and hygiene, and teach her how to prepare her patient properly for delivery. This instruction should include prenatal care, and if possible all should be given by a physician. In addition she should be taught the best way to collect specimens and get them to the laboratory for examination; also how to prepare sterile dressings out of rags or such materials as the patient may have, for both mother and child. She must know that the things once sterilized must not be touched; she should know how to clean her hands, fix her scissors and how to dress the cord. She should know the symptoms that forewarn of eclampsia, that she may call a physician at once. These and other things she should be taught to do, but the vast majority, let me repeat, must be taught well what not to do.

Many of the midwives are over 70 years of age, and they are consequently feeble and cannot see as well as they should. The old, the unclean and the unfit should be gradually eliminated. This process of choosing the good from the bad will of necessity be slow. The local physician should assist in this weeding out. Only the qualified should be the final dependence; they must be ready and willing to ask for assistance of the most accessible and competent physician. It is important that the midwife and the physician work together in harmony. The sympathy and duty of the physician must compel him to go to the assistance of the midwife when called. If he knows the midwife and if she has been treating him properly I feel that he will always do so.

After careful consideration and very close daily contact with the midwife problem, I am convinced that great good has been accomplished by our method, which was made possible by the cooperation of the Children's Bureau. There is a marked improvement in the appearance of the midwife who has attended classes; she is a different individual; she is much better and safer. Not only is the improvement observed in the personal appearance of the individual, but her home shows pronounced improvement. In Georgia it is thought that the home visit is one of the best means of gaining the confidence and assistance of the midwife.

The method of procedure now confronting Georgia, since federal aid will be definitely withdrawn June 30, 1929, is a serious one. The work begun is far from being completed. Perhaps there is in Georgia a situation different from that in other states, as the constitution limits the power of taxation to 5 mills for all purposes. The budget committee must stay within this constitutional limit. It is felt that the state board of health shares very liberally with other departments of the state, and it cannot be expected to get more than an equal share. I am anxious to find some way in which the instruction to midwives can be carried on. A plan is now being considered to secure, through the county medical society, a physician in each county to act as instructor and supervisor of midwives for his county,

and perhaps for other counties where no physician capable and willing can be found and for counties where there is no physician at all. Is this feasible? Is this practicable? Is there a better way?

ABSTRACT OF DISCUSSION

DR. STANLEY H. OSBORN, Hartford, Conn.: This midwife study in Georgia is very interesting. We in the North have had the same problems and have wondered what we were going to do with them. About five years ago 16.1 per cent of the births in Connecticut were attended by midwives. Now by certain laws, midwives must call a physician in difficult cases. In order to carry out the legislation we secured a graduate midwife who was a public health nurse and she worked for three years improving the personal cleanliness of midwives and trying to secure complete reporting in cooperation with the physician of the births. Then we found that it was necessary to get the cooperation of physicians to respond when the midwife called. The midwives started to complain that the physicians would not come and help them in the difficult cases which they were required by law to turn over to them. The result was that we replaced the graduate public health nurse with a physician, and after that had been done we found that the physician who is now the supervisor is able to get in touch with the physicians and as a result the physicians are cooperating with the midwives and things are clearing up surprisingly well. After five years of this work, the number of cases handled by midwives has decreased from about 16.1 per cent to about 7.5 per cent, and we feel that this has increased the chance for mothers to live and has meant a higher percentage of children born that are living.

DR. LOUIS J. HARRIS, New York: The general maternal mortality in America, and in some states in particular, constitutes a very serious problem and ought to provoke serious discussion. I am not convinced that Georgia's problem is hers alone, for even in such provincial cities as New York about 25 per cent of all deliveries are conducted by midwives. It has been stated that in New Jersey, for example, the maternal mortality under the care of midwives is much less than that of women under the care of physicians—a daring statement, especially as it includes all cases in which midwives may at any juncture in the course of the case have had any relation to the care of the patient. We must have a means of instructing midwives—but not 70 year old ones. In the state of New Jersey they have even found ways of teaching midwives to wear rubber gloves and there has been a most radical improvement in obstetric conditions in that state.

DR. JOE P. BOWDOIN, Atlanta, Ga.: Our experience in Chatham County, where we have a completely organized health unit and reliable statistics, shows real results obtained from teaching midwives. In 1920, twenty-six colored and two white infants died of tetanus neonatorum in this county; in 1921, twenty-six colored infants and one white child died from this cause. Midwives were placed under the rules of the state board of health in 1922 and instruction was begun. Deaths from tetanus of the cord fell rapidly, and since the summer of 1925 not a single death from this cause has been recorded. In the prenatal clinic in Chatham County there were 611 patients in the past year. Of this number, 557 have been delivered. This is practically two thirds of the total number of births for the city and county among the negro population. The stillbirth rate among untreated syphilitic mothers averages 52 per cent, and 7 per cent of children born alive die in two weeks. Of the 611 attending our prenatal clinics 225 had positive Wassermann reactions. Only 5 per cent of the patients had stillbirths, so at least 100 babies' lives were saved by the prenatal work. We are trying in Georgia to do away with all midwives who are not fit. Today Georgia stands second in mortality and we hope this work will have something to do in improving our record. As was mentioned by our chairman, the rate for the country at large is far too high. There is no reason for the death of a mother barring accidents, and we must see that she gets proper prenatal care and proper treatment. In other words, if mothers can be educated and we can bring the proper relief to them, there is no reason why the death rate should not be cut down.

EFFECTS OF ETHYLENE-OXYGEN ANESTHESIA ON THE NORMAL HUMAN BEING *

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Ethylene in combination with oxygen as an agent of anesthesia was first used clinically at the Presbyterian Hospital, Chicago, March 14, 1923. Since these original clinical studies, ethylene-oxygen gas as an agent of anesthesia and analgesia has become quite widely accepted. There have been numerous reports of experimental and clinical studies of the effects of this anesthesia on the various biologic and physiologic processes; but, to my knowledge, no one has ever conducted a carefully controlled study of its effects on the normal human being, without any complicating factors such as surgical trauma, preanesthetic medication, pathologic conditions and mental anxiety due to an impending operation being present.

The surgical service of Letterman General Hospital was interested in knowing the effects of ethylene-oxygen anesthesia on the normal human being when there were no other complicating factors present. As an approach to this problem, it was decided to anesthetize a number of normal subjects for a definite period of time and carefully study the effects of the anesthesia on the various body processes when no complicating factors were present. In view of possible danger and complications, the chief of the surgical service sought and obtained the approval of higher authority for the procedure. This study has been completed, and it is thought that our results may be of interest to the medical profession.

METHODS AND OBSERVATIONS

Subjects.—Fifteen men, eight of whom were graduate physicians, officers of the medical corps, and seven of whom were enlisted men of the medical department, volunteered to be anesthetized for this study. The ages ranged between 21 and 37 years, and all passed a careful physical examination.

Method.—The anesthesia was given in the morning, without breakfast and without any preanesthetic medication. Before the anesthesia was begun the blood pressure, pulse and respirations were recorded, a specimen of urine was obtained, the hemoglobin was determined, and blood was drawn from the median vein for the determination of the coagulation time, blood sugar, blood urea, carbon dioxide combining power, and the icterus index. The subjects were anesthetized for one hour, at as nearly a constant depth of surgical anesthesia as possible; the induction was started with a mixture of approximately 85 parts of ethylene and 15 parts of oxygen, and maintained as near this concentration as the patient would permit. Two brands of ethylene gas, both accepted by the Council on Pharmacy and Chemistry of the American Medical Association, were used. During the anesthesia, the pulse, blood pressure and respirations were recorded at five minute intervals. At the termination of anesthesia, the hemoglobin was again determined and another specimen of blood was drawn from the median vein for the determinations mentioned. Twenty-four hours after the anesthesia, the subjects reported without breakfast, the hemoglobin was determined, a specimen of urine obtained and a specimen of blood again with-

* From the Surgical Service, Letterman General Hospital, U. S. Army.

drawn from the median vein. The recovery time and all postanesthetic morbidity were carefully recorded.

The Induction Sensation.—Each subject described his induction sensation. All reported it as being pleasant; no one noticed any sensation of suffocation, and nearly all noted that their motor powers were lost before consciousness. Four mentioned a felling of well being, and one subject talked freely during the second stage but showed no other motor activity. No one mentioned the odor of the gas as being distasteful during induction, but five mentioned the odor as being very unpleasant at the first contact with the gas following their anesthesia; this, however, was only temporary.

Recovery Time.—The average time between the termination of the anesthesia and the recovery of consciousness was one minute and forty-four seconds.

Hemoglobin.—The Newcomer hemoglobinometer was used for the hemoglobin determinations. One hundred on the scale of this instrument is equivalent to 16.92 Gm. of hemoglobin per hundred cubic centimeters of blood. The technic of these determinations was as follows: Blood from a puncture wound in a finger was drawn to the 10 mark (10 cubic millimeters) in a 5 cc. pipet, and the remainder filled with the diluent, which is a solution of 1 per cent of hydrochloric acid. Clear water was placed in the cup containing the standard, and the contents of the pipet were placed in the other cup, and the two color fields matched. Ten minutes was allowed to elapse between the dilution and the time the readings were made; the proper time correction was made for each reading according to the maker's chart furnished with the hemoglobinometer. The average hemoglobin reading for the fifteen subjects before anesthesia was 80.8; immediately after anesthesia, 79.7; and twenty-four hours after, 79.3 The greatest variation in the hemoglobin reading occurred in one subject who gave a reading of 86.5 before, 86.5 immediately after, and 68 twenty-four hours following anesthesia; this subject's icterus index, however, was 6 before, 5 immediately after, and 6 twenty-four hours after anesthesia. From the average of the entire group it is readily seen that there is no change in the hemoglobin following this anesthesia.

Icterus Index.—Pigment metabolism is not completely understood. Investigation up to the present seems to warrant the conclusion that, in the normal destruction of red blood cells within the body, hemoglobin is liberated, from which, through a process not completely understood, bilirubin is formed as an end-product. Normally there is a small quantity of bilirubin present in the blood serum, which is constant under normal conditions for the same individual, and it is generally believed that the yellow color of normal blood serum in the fasting person is due to bilirubin. Any increase in the amount of bilirubin produces a deeper than normal color of the blood serum. This occurs in (1) disturbances of the biliary system, e. g., diseases of the liver, cholecystitis and adhesions about the gallbladder, and (2) in hemolytic processes of the body, e. g., hemolytic jaundice, pernicious anemia, malaria and hematomas.

Accepting the foregoing assumptions, it was thought that a determination of the icterus index would be of value in determining whether or not this anesthesia caused any appreciable increase in the destruction of red blood cells, or caused any disturbance in the biliary system. The icterus index of each subject was determined immediately before, immediately after, and twenty-four hours following the anesthesia. The technic of this determination was essentially as follows: Five cubic centimeters of blood was drawn from the median vein into a dry centrifuge tube, and the blood was allowed to clot, protected from the light, and centrifugalized. The clear serum was removed by a pipet, placed in the colorimeter cup and matched against a standard 1:10,000 solution of potassium bichromate. The improved Kober colorimeter was used in these evaluations. The cup containing the standard solution was set at 15 millimeters. The reading of the standard (15 mm.) divided by the reading of the serum gives the icterus index. The normal icterus index is between 4 and 6. The average icterus index of fourteen of the subjects immediately before anesthesia was 5.39, at the termination of anesthesia it was 5.02, and twenty-four hours following anesthesia it was 5.26. One subject, not included in the foregoing averages, gave a reading of 5.8 before, 6.5 immediately after, and 15 twenty-four hours following anesthesia. Jaundice was not present clinically, and the subject felt well. On careful questioning, he recalled having eaten some salad which contained carrots the night following the anesthesia; thus carotinemia may account for this high icterus index. Of the other fourteen subjects the variations in the readings are within experimental variation. From the foregoing average values, it is clear that there is no appreciable change in the icterus index immediately following or twenty-four hours after ethylene-oxygen anesthesia. This leads to the conclusion that there is no appreciable destruction of red blood cells, with the resultant liberation and destruction of hemoglobin, and no appreciable derangement of the biliary system following ethylene-oxygen anesthesia.

The literature contains little material for comparative purposes; I am familiar with only one report, that of Yates and Raine.[1] According to these authors, "The icterus index is very high a few hours after ethylene and nitrous oxide. The increase amounts to from two to three times the normal, beginning during the anesthesia, and reaching a peak from one to six hours later." These authors do not describe their technic and do not mention the number of determinations from which they reach their conclusions. Their observations are opposite to our conclusions.

Blood Sugar.—The blood sugar of each subject was determined immediately preceding, immediately following and twenty-four hours after anesthesia. The method of Folin and Wu was used for these determinations. The average blood sugar of the fifteen subjects before the anesthesia was 88.78 mg. per hundred cubic centimeters, immediately following it was 129.05 mg., and twenty-four hours after it was 89.62 mg. Each subject showed a definite increase in the blood sugar immediately following anesthesia, the average being 45.3 per cent, and a fall to practically the preanesthetic level in twenty-four hours following the anesthetic. By way of comparison, Trout[2] studied the blood sugar of a series of patients who were undergoing operative procedure, the average duration of anesthesia being thirty-six minutes. He reports an average increase of 29 per cent in the blood sugar immediately following anesthesia, with a return to practically the preoperative level in the subsequent twenty-four hours. The series which is reported here were

1. Yates, J. L., and Raine, F.: The Untoward Effects of Narcotics and Anesthetics on Robust and Handicapped Patients, Ann. Surg. **87**: 124 (Jan.) 1928.
2. Trout, H. H.: Blood Changes Under Ethylene Anesthesia, Ann. Surg. **86**: 260 (Aug.) 1927.

anesthetized for sixty minutes, and were all healthy subjects; it is possible that the longer duration of the anesthesia and the better reaction of the subject to the anesthetic may account for the greater increase in the blood sugar immediately following anesthesia. This series clearly shows that there is a marked increase in the blood sugar immediately following the anesthesia, with a return to practically the preanesthetic level during the subsequent twenty-four hours.

Blood Urea.—Three determinations of the blood urea were made on each subject. The method of Folin and Wu was used in these determinations. The average blood urea of the fifteen subjects preceding the anesthesia was 12.46 mg. per hundred cubic centimeters. At the termination of the anesthesia it was 12.75 mg. and twenty-four hours following the anesthesia it had risen to 14.80 mg. It is readily seen that there is no increase in the blood urea immediately following the anesthesia; however, there is a definite increase of 18.7 per cent over the preanesthetic level, twenty-four hours after the anesthesia. This increase is probably significant, since twelve of the fifteen subjects showed a small but definite increase in their blood urea at this time. Of the remaining three subjects, one showed no increase, and two a very slight decrease over their preanesthetic level. From the foregoing observations, we are of the opinion that there is a moderate, but definite, increase in the blood urea twenty-four hours following the anesthesia. While this increase in the robust individual is perhaps of little importance, in the patient with a well advanced nephritis and the associated retention it might be an important factor in the final breakdown.

Carbon Dioxide Combining Power of the Blood Plasma.—Carbon dioxide, the most important acid end-product of metabolism, is chiefly eliminated from the body in two ways: The larger part is carried off by the lungs; the lesser part is neutralized by ammonia and is then built up into urea and excreted by the kidneys. Carbon dixoide is carried to the lungs chiefly in combination with fixed bases, which are the principal buffer substances of the blood. When these are diminished, the ability of the blood to carry carbon dioxide is correspondingly decreased. The carbon dioxide combining power of the plasma is then a useful measure of the reserve of the fixed bases in the blood, and is probably the most reliable test for acidosis. The carbon dioxide combining power of the plasma of each subject was determined according to the method of Van Slyke and Cullen, before, immediately after and twenty-four hours after anesthesia. The normal range for adults is from 53 to 75 cc. per hundred cubic centimeters of blood plasma. The average carbon dioxide combining power of the plasma of the fifteen subjects was 59.1 cc. before, 54.54 immediately after, and 60.63 cc. twenty-four hours after anesthesia. Each subject showed a definite decrease in the carbon dioxide combining power of the blood plasma immediately following anesthesia, the average decrease over the preanesthetic level being 8.35 per cent; however, twenty-four hours following anesthesia, the carbon dioxide combining power of the blood plasma returned to slightly above its preanesthetic level. From this series, we conclude that ethylene-oxygen anesthesia produces a moderate decrease in the alkali reserve of the blood, which is only temporary, and returns to the preanesthetic level within twenty-four hours.

Coagulation Time of the Blood.—There has been much discussion in the literature as to whether or not ethylene causes increased oozing. Horsley, Aurelius, Trout, Allen and Murray, and others report no change in the coagulation time during ethylene-oxygen anesthesia. Strauss and Rubin[3] report a definite decrease in the coagulation time during and for twenty-four hours following the anesthesia. In this study, three determinations of the coagulation time of each subject were made. Lee and White's method was used. The technic was essentially as follows: One cubic centimeter of blood was drawn from the vein directly into a test tube (8 mm. in diameter) which had just previously been rinsed with physiologic solution of sodium chloride. The tube was tilted at intervals, and coagulation was assumed to be complete as soon as the tube could be inverted without displacement of the clot. The normal coagulation time by this method is from five to ten minutes. The average coagulation time of the fifteen subjects immediately before anesthesia was seven minutes and eleven seconds, immediately following anesthesia it was eight minutes and eight seconds, and twenty-four hours after anesthesia it was eight minutes and five seconds. There were no characteristic variations in the determinations of the individual subjects, and it appears quite certain that there is no change in the coagulation time following ethylene-oxygen anesthesia.

Character of the Blood Clot.—The character of the blood clot was studied by placing the coagulation tubes in an incubator at 37 C. for twenty-four hours. The tubes were observed at intervals. In every case the coagulum began to retract within a few hours after it was formed, and was well separated from the walls of the test tube in twenty-four hours. There was no difference in the behavior of the clots of the blood taken before and after anesthesia.

Urinary Observations.—Specimens of urine obtained from each subject immediately preceding the anesthesia and twenty-four hours after were examined both chemically and microscopically. The results were normal in all the specimens. In no case did any of the specimens following the anesthesia give a positive test for sugar or albumin. The microscopic examinations failed to reveal any evidence of injury of the kidney.

Blood Pressure.—The blood pressure was recorded before anesthesia and at five minute intervals during the anesthesia. For this determination a sphygmomanometer of the mercurial manometer type was used. The average systolic blood pressure of the fifteen subjects before anesthesia was 120 mm. of mercury; the average diastolic blood pressure was 77.3, giving an average pulse pressure of 42.7. The average systolic pressure of the fifteen subjects during anesthesia was 137, or an increase of 14.1 per cent over the preanesthetic level. In a series of cases observed during surgical procedures at this hospital, and reported elsewhere, there was an average increase of 12 per cent in the systolic pressure during anesthesia. During the first five minutes of anesthesia there was a sudden increase in the systolic pressure, which with a slight decrease continued until the termination of the anesthesia. The average diastolic pressure during anesthesia was 80, or an increase of 3.5 per cent over the preanesthetic level. The average pulse pressure during the anesthesia was 56.2, or an increase of 31.4 per cent over the preanesthetic value. It will be observed that the diastolic pressure showed relatively little change in value during the anesthesia. During the first ten minutes the diastolic pressure showed almost a proportionate rise with the systolic pressure, but after this it fell to almost its

3. Straus, D. C., and Rubin, H. H.: Coagulation Time in Ethylene Anesthesia, J. A. M. A. 88: 310 (Jan. 29) 1927.

preanesthetic level and remained there during the remainder of the time. The increase in the pulse pressure is nearly all accounted for by the rise in the systolic pressure and not by any fall in the diastolic pressure.

Pulse Rate.—The average pulse rate of the fifteen subjects before anesthesia was 74. The pulse was counted at five minute intervals during the anesthesia. The average pulse rate during anesthesia was 76, or an increase of two beats per minute, which is of little consequence. There was no characteristic increase in the pulse rate during the anesthesia. It appears from this small series of normal subjects that ethylene-oxygen anesthesia produces little change in the pulse rate.

Postanesthetic Morbidity.—Of the fifteen subjects, six said they had no headache, and nine said they had a headache following the anesthesia, which lasted for an average of eight hours. Only one subject described the headache as severe, most of the others describing it as being of a dull, heavy character. This is a much higher incidence than is observed among our patients undergoing surgical procedures. These subjects were not given opiates following the anesthesia, as is the case with practically all of our operative patients, and the anesthesia was considerably longer than in the average operative case. These factors might explain the increase in this incidence of headache.

Two subjects were not nauseated following the anesthesia. The remaining thirteen were nauseated for an average of four and a half hours. Three of the subjects did not vomit; the remaining twelve vomited on an average of four times, over a period of time which quite closely paralleled the nausea. Here again the incidence of nausea and emesia is markedly higher than is generally encountered in patients undergoing operation; however, after two hours these subjects were allowed to get up from bed if they desired, go and do what they chose, and take whatever nourishment they desired. The absence of careful postanesthetic control and the longer duration of the anesthesia are perhaps partially responsible for this increased morbidity.

None of the subjects reported any respiratory irritation, and there were no respiratory complications. There were no gas pains following the anesthesia.

CONCLUSIONS

From the study of fifteen normal subjects under ethylene-oxygen anesthesia for one hour, without any preanesthetic medication, and without operative or other complicating factors, we feel justified in drawing the following conclusions:

1. The induction sensation of a subject undergoing ethylene-oxygen anesthesia is pleasant; the odor of the gas is not a disturbing factor either during induction or following recovery.
2. There is no change in the hemoglobin, as shown by the Newcomer hemoglobinometer, either immediately following, or twenty-four hours after anesthesia.
3. There is no change in the icterus index, either immediately following or twenty-four hours after anesthesia, and there is no appreciable destruction of red blood cells, with the resultant liberation and destruction of hemoglobin, and no appreciable derangement of the biliary system, following this anesthesia.
4. There is a marked increase in the blood sugar immediately following anesthesia, the average being 45.3 per cent with a fall to practically the preanesthetic level in the subsequent twenty-four hours.
5. There is no change in the blood urea immediately following anesthesia, but there is a definite increase in the blood urea twenty-four hours after the anesthesia, which in this series averaged 18.7 per cent.
6. There is a moderate decrease in the carbon dioxide combining power of the blood, which is only temporary, and returns to the preanesthetic level within twenty-four hours. The average decrease in this series was 8.35 per cent over the preanesthetic level.
7. There is no change in the coagulation time of the blood, either immediately following or twenty-four hours after this anesthesia.
8. There is no change in the character of the blood clot either immediately after or twenty-four hours following this anesthesia.
9. There are no urinary changes following this anesthesia.
10. There is an increase in the systolic blood pressure, which in this series amounted to 14.1 per cent, and a slight increase in the diastolic blood pressure, which in this series amounted to 3.5 per cent, and an appreciable increase in the pulse pressure, which in this series averaged 31.4 per cent during this anesthesia.
11. There is no appreciable increase in the pulse rate during this anesthesia.
12. The postanesthesia morbidity in this series was much greater than is usually encountered in patients undergoing operative procedures.
13. I am not in a position to make accurate and worth-while comparative studies with other anesthetics, since I am not familiar with values drawn from studies of normal human beings undergoing the various other anesthesias.

THE AVERAGE TREATMENT OF CANCER

REPORT OF A SURVEY OF FACILITIES AVAILABLE IN THE AVERAGE AMERICAN CITY, WITH ESPECIAL REFERENCE TO EARLY CARE *

HARRY C. SALTZSTEIN, M.D.
DETROIT

Any one who has been interested in the effects of publicity on the control of cancer cannot help having noticed the various judgments, the differences of opinion, and often the incompleteness of the treatment offered the patients with cancer, once they have reported with the suspicious early lesion. Hence, when this brief survey of the treatment facilities available to the average cancer patient in the average community was suggested by the American Society for the Control of Cancer, it was undertaken with some interest.

METHOD

Twenty average cities were selected for which refined mortality rates were available. They ranged in population from 100,000 to 1,000,000. The statistics for these cities are shown in table 1.

The inquiries were confined to general information about the hospitals, their policies and support, the equipment and procedures regarding the use of deep x-ray therapy and radium applications, and the surgical experience of some of the active surgeons in these institutions in the treatment of cancer of the lip, breast, cervix, stomach, colon, and rectum for 1927.

Throughout the investigation, interest was centered on treatment in the early stages, on the more frequent

* Conducted under the auspices of and for the American Society for the Control of Cancer.

cancers (stomach, breast) and on those in which early treatment offered most (e. g., lip). Palliative operations and irradiation, rare forms (e. g., sarcoma), or cancer in which not so much is obtained from early treatment (e. g., of the prostate) were not emphasized.

With one or two exceptions, well known medical centers were avoided. What was aimed at was an answer to the question, What treatment is available to the average citizen in the average American city?

HOSPITALS

Hospitals are enlarging and expanding throughout the entire country. There were not many cities in which the hospital superintendents stated that there was a very great shortage of beds for acutely ill patients; if there was a shortage, in all but a few instances additional buildings were in process of erection or were being planned to compensate for this.

The hospital where a patient may be operated on or otherwise treated for cancer is of importance only as one considers the men who work there—the hospital per se has done little in the interest of the cancer patient. In general, in whichever hospital the most active surgeons in the community do their private work, there will be found the greatest number of cases of cancer in a stage suitable for treatment which may be curative.

TABLE 1.—*Cities Visited*

City	Population, 1926	Cancer Death Rates, 1925		
		Crude	Adjusted	Refined
Albany	119,500	129.9	101.9	92.6
Bridgeport	152,500	.....	.....	.....
Camden	133,100	83.7	89.7	80.6
Cincinnati	412,200	142.1	113.2	103.3
Cleveland	984,500	86.5	105.2	100.7
Dayton	180,700	115.6	106.0	95.9
Detroit	1,291,724	73.0	101.0	102.0
Fall River	132,600	114.0	113.4	106.5
Grand Rapids	161,900	102.6	89.6	89.6
Hartford	168,300	138.8	138.1	104.5
Indianapolis	374,300	118.7	106.3	97.0
Louisville	325,100	109.6	93.3	94.4
Newark	463,700	110.6	125.2	120.2
Paterson	143,800	121.1	119.6	110.6
Pittsburgh	605,500	112.7	123.5	122.7
Providence	280,600	125.0	110.4	102.1
Syracuse	197,600	124.2	108.3	98.2
Toledo	305,400	92.7	88.7	82.0
Wilmington	126,400	89.3	88.8	88.8
Youngstown	169,400	80.0	116.8	105.0

City hospitals and the free services of general hospitals contain fewer cases of cancer in this early potentially curable stage than do private hospitals and private services. For example, in Detroit in six months there was one radical breast amputation for cancer at the Detroit Receiving Hospital (596 beds), while during the same period there were thirty-nine breast amputations at the Harper Hospital (430 beds), thirteen at the Grace Hospital (368 beds) and thirteen at the Henry Ford Hospital (411 beds).

In Cleveland, during 1927, there were eleven operations for cancer of the breast at Lakeside Hospital (263 beds), the teaching hospital of Western Reserve University School of Medicine, while at the Cleveland Clinic Hospital there were thirty-seven and at St. Vincent's Charity Hospital (295 beds), fifty-three. Both the latter institutions are the workshops of surgeons with very large private practices.

There must be two reasons for this: (*a*) The poorer classes come much later for treatment and hence are more frequently in an inoperable condition, and (*b*) when considering an operation for cancer, the family, being greatly concerned, is very apt to strain its finances to get the best skill available in the community.

Hence any active plans or suggestions for the betterment of the average treatment of early cancer must take into account that the institutions concerned are the most active private hospitals, and that the surgeons are the best in the community, for under these auspices are to be found most of the potentially curable cases.[1]

SURGERY

Most of the potentially curative surgery of cancer is surgery of the breast. Cancers originating in the nose, throat and accessory sinuses are rare and are not often seen early enough for any treatment that may be curative. They were not considered in this investigation. Mouth cancers are few and very difficult to treat. Lip cancers are relatively few; frequently, either they have been turned over to the radium or x-ray therapeutist, or the patient refuses to have an operation on his lip.

The number of breast amputations for cancer is four or five times as great as the total number of resections of different parts of the alimentary canal for cancer (table 2).

Most of the treatment of carcinoma of the cervix is by irradiation. Though 40 per cent of the surgeons interviewed, and among these are included some of the best, stated that they advised operation in early cases, this stage is rarely seen, and, in addition, the skill required to do a radical operation for cancer of the cervix is not very often available. Most patients with cancer of the cervix come for treatment at a stage when cure is problematic. Similarly, the treatment of prostatic cancer is discouraging as regards the possibility of effecting a cure; bladder cancers are not common and are not very hopeful; sarcoma is rare. Skin cancer, though probably cured more frequently than cancer in any other location, furnishes a relatively small part (3 per cent) of the total mortality.

Thus breast cancer, which represents 12 per cent of the total cancer mortality, represents most of the operations for cancer which may cure. The number of breasts amputated for cancer is from one and one-half to two times the number of deaths from cancer of the breast in a given population during a given period of time.[2]

In the average city of moderate size there are from one to four busy surgeons who are apt to do one third or one half of the total surgery of the community and of a contiguous territory, which may contain from 10 to 25 per cent additional population. These men will do on an average from six to twelve radical breast amputations a year. It is an extremely active surgeon who does more than this. Of seventy surgeons consulted, not more than half a dozen had operated on more than fifteen breast cancers in 1927.

1. It may be thought that undue emphasis is being placed on surgery in these statements. The early potentially curable cases are being considered, and the vast field of palliation is being disregarded for the moment. It is felt that irradiation does not compete with surgery in this domain in large numbers of cases. Patients with carcinomas of the cervix, the largest field for irradiation, come very late for treatment; in the average situation it is surprising how few cancers of the cervix are "cured." It is not settled that early cancers of the lip and mouth should be given over entirely to radiation therapy.

2. In nineteen cities there were 595 deaths from cancer of the breast in 1927. Seventy-five hospitals, representing 75 per cent of the total bed capacity of these communities reported 918 operations for cancer of the breast in 1927. Approximately 25 per cent of these cases came from outside the city (based on returns including 521 cases). An estimate based on the total hospital beds, and excluding those coming from out of the city—and therefore not included in the death returns—would still be 918 (75 per cent of the total canceling with 25 per cent from out of town). Thus the number of operations for breast cancer (918) was 1.5 times the corresponding number of deaths (595). More accurate figures obtained in Detroit showed 1.9 operations per death from breast cancer (also corrected for nonresidents).

Any one who thinks the operation for cancer of the breast is a completely standardized procedure need only get the opinions of several of these generally well qualified surgeons to think otherwise. Roughly, 60 per cent invariably do the original Halsted-Willy Meyer radical operation, removing both minor and major pectorals and carefully dissecting the axilla in every case. Thirty per cent frequently leave the minor muscle, while 8 or 10 per cent always do. Fifteen per cent leave the pectoralis major in some cases, especially if the growth is below and outside the nipple or the case is far advanced.

In a few hospitals, no extensive operation is done if the axilla is invaded, reliance being placed on irradiation if there are many glands palpable in the axilla. Of thirteen operations for cancer of the breast done in one hospital, three were listed as radical, the others semiradical or local excision.

CANCER OF THE ALIMENTARY CANAL

Radical resections alone will be considered. Palliative procedures (gastro-enterostomy, colostomy, etc.) do not accomplish a great deal and do not offer the surgical problems that resections of the intestine do. Though stomach cancer is responsible for one-third the total mortality from cancer, the number of persons who recover from the radical operation for cancer of the stomach from one end of the year to the other is almost negligible.

TABLE 2.—*Operative Recoveries from Cancer in Seventy-Five Hospitals in Nineteen Cities*

(This represents 17,876 beds, 76.5 per cent of the total hospital beds in these communities.)

Per Cent of Total Cancer Mortality		Total Number of Operations	Operative Mortality		Operative Recoveries
			Number	per Cent	
12	Breast	918†	..	..	..
33	Stomach resections	67	27	40	40
6	Colon resections	91	40	44	51
6	Rectum resections	55	27	49	28

* Three gastric resections with no deaths; six colon resections with no deaths, and fifteen rectum resections with two deaths; figures from a certain group clinic are not included, as they do not represent the average situation.

† Includes all operations for breast cancer; operative mortality not given.

During 1927, in seventy-five hospitals in nineteen different cities,[3] a total of sixty-seven gastrectomies for cancer were performed. Forty patients recovered and twenty-seven died, an operative mortality of 40 per cent.

This high mortality is further emphasized by a previous study,[4] in which it was found that in two years (1925 and 1926) twenty-eight gastrectomies for cancer were performed in Detroit, with thirteen deaths, a mortality of 46 per cent. The possibility of improvement here lies in improvement in medical diagnosis. The clinical picture of early cancer of the stomach, as described by Eusterman and Balfour, is not yet generally understood by the profession as a clinical entity of a possibly serious nature. Many medical men and surgeons are absolutely pessimistic regarding any possibility of cure in stomach cancer. The figures just cited show the reason for this—in the entire yearly experience of communities totaling 6,788,224 people there were only forty operative recoveries from gastric resections for cancer.

COLON

There were ninety-one colon resections in these seventy-five hospitals during the same period. Fifty-one patients recovered and forty died, a mortality of 44 per cent; this was about the same number of resections as were performed in cancer of the stomach, with a slightly higher mortality.[5] Many of the surgeons interviewed could recall a few five year cures in colon cancer. A large proportion of all colon cancers are operated on. The operation is generally done in the terminal stage, when obstruction is present and hence only palliation is possible. However, with increasing recognition of the fact that lower abdominal pain alone may mean cancer of the large bowel, and the recognition of the fact that the mortality is much less with multiple stage operations, there should be continuous improvement here.

RECTUM

In these institutions, exclusive of fifteen cases treated at the clinic mentioned, fifty-five rectal cancers were resected. Twenty-eight patients recovered, and twenty-seven died, a mortality of 49 per cent. In this clinic, which does not represent the average treatment available, there were fourteen recoveries and two deaths.

Surgeons generally were quite dissatisfied with their results in rectal carcinomas, and very few reported any five year cures. The contrast here between the average surgical treatment and what could be accomplished under special auspices was quite marked.

MOUTH

Cancer of the mouth is not considered in this report. It is not common; it is very frequently hopeless when the patient comes for treatment, and the treatment is quite varied and often incomplete. (Lip cancer is discussed below under radium therapy.)

GENERAL

Most of the surgeons who saw many cases of malignant disease were quite well along in years. The only younger men who had the opportunity of surgically treating any appreciable number of cancer cases were associates of active surgeons, or members of group clinics. Several surgeons were met who were quite pessimistic regarding any accomplishment in the therapy of cancer. Their experience, which frequently was large, did not make them believe that surgery offered much hope to the patient with cancer.

This attitude is certainly not conducive to giving the patient the best possible treatment. The only answer is that other surgeons of equal experience and ability have records showing different results.

Thus, as regards the average surgical treatment of cancer, as obtained from the experience in 1927 of ninety surgeons in twenty cities:

1. A large number of patients with breast cancers were operated on, perhaps from one and one-half to twice as many as die each year. The total number of breast amputations for cancer was from four to five times as great as all the resections for cancer of the alimentary canal.

2. The completeness of the operation as done by these several surgeons varied within wide limits.

3. There were sixty-seven stomach resections, ninety-one colon resections and fifty-five rectum resections in seventy-five hospitals in 1927. The operative mor-

3. Returns were not obtained from one of the twenty cities.

4. Saltzstein, H. C.: Report of Cancer Committee of Wayne County Medical Society on Further Experiences with Publicity in Cancer, J. A. M. A. **89**: 1541-1545 (Oct. 29) 1927.

5. Another analysis in Detroit showed that there were about as many resections of the stomach for cancer as there were of the rectum, and from 50 to 100 per cent more colon resections than either stomach or rectum—about the same relative proportions as shown in table 2.

tality of resections for abdominal cancer was approximately from 40 to 50 per cent.

4. The surgeons operating in many cases of carcinoma were, in general, well along in years. Some were pessimistic with regard to the value of their efforts.

VALUE OF X-RAY THERAPY

In this survey there was no marked enthusiasm among most of the surgeons interviewed for postoperative x-ray therapy in breast cancer. Preoperative therapy has rather generally been given up. Postoperative deep x-ray therapy is given as a routine by from 60 to 70 per cent of the surgeons interviewed. Another 15 per cent sometimes give it. Many stated that they ordered it as a routine "to give the patient the benefit of the doubt" or "because it was customary." Ten per cent had tried it, but had discontinued its use during the past two or three years. As many stated that they were convinced that it was valueless as believed in its benefit. Of those who were convinced that it was of value, some said it prolonged life and others valued it because it retarded local recurrences. The remainder stated that their experience did not warrant final judgment.

The opinion among roentgenologists was different. In general they were convinced of the value of postoperative irradiation. Many of them also would like to give preoperative irradiation, but patients were generally not sent to them for this treatment. While some very thoughtful roentgenologists, studying the results of others, had not yet installed a high voltage equipment, nevertheless many hospitals had recently installed or were contemplating installing modern equipment.

There was the widest difference of opinion among roentgenologists as to methods of technic in irradiation of the breast. The differences include all possible combinations of the variable factors, and no unanimity of method is apparent. Few give the maximum dosage of 200,000 volts; the greater number (80 per cent) preferring from 135,000 to 150,000 volts. Some stated that all the effect obtained by the high voltage machine can be obtained by the old 9 or 10 inch gap current. A very few give an intensive massive dose, aiming to inhibit possible lung metastases; the majority give a saturation dose in a brief series repeated once or twice, and a few give this dose repeatedly over several months —as long as the patient will return. The danger of pulmonary fibrosis is recognized and many of these doses are smaller than those given two or three years ago.

Concerning deep therapy in pelvic cases there is more agreement as to technic but a wide difference as to indications. Many rely on radium alone for pelvic cancer, giving deep therapy only for the relief of pain in late cases. Others give deep therapy in every case of carcinoma of the cervix treated with radium. The technic of treatment agrees much more than in cancer of the breast; uniformly 200,000 volts is cross-fired through two or three areas, the series generally (but not always) being repeated after an interval of six or eight weeks.

Even the most conservative, who did not believe in deep therapy in breast or pelvic cancer, believed that it was of distinct value as a palliative procedure in chest conditions, in cancer of the neck, and in deep seated (perhaps all) sarcomas which could not be reached by radium or in which there was not a sufficient amount of radium available.[6]

5. Dr. C. K. Hasley was kind enough to compile the data concerning x-ray therapy.

Most of the roentgenologists using the deep therapy machines in the treatment of cancer had previously been x-ray diagnosticians. A few had had special training in physics or had worked closely with physicists. Practically none interviewed had had any special training in pathology.

STATUS OF RADIUM THERAPY

In only three cities visited were there larger amounts of radium than 100 or, occasionally, 200 mg. The majority of physicians stated that they had no need for more radium, as they obtained gold seeds for an occasional patient from New York, or sent the occasional patient elsewhere for treatment. Some general surgeons, but not many, had their own radium. Uniformly, they were not using it more frequently than they did two or three years ago. In some instances they used it less often than formerly. Several gynecologists had their own radium for pelvic cancer, but in several cities, chiefly in the midwest, there were not many gynecologists who treated very many cancers.

There seems to be a tendency for the roentgenologist to combine the use of radium with his deep therapy equipment, and apparently more patients with pelvic cancer are being referred to x-ray men because of this. This makes for more concentration of cases than was noticeable in the surgical treatment of cancer, several individuals or offices being found in which from twenty-five to forty cancers of the cervix were treated each year; this represented a large proportion of the total number of cases in the community.

There is also a lack of uniformity in radium treatment of carcinoma of the cervix. Some give from 1,200 to 2,000 mg. hours, generally, but not always, repeated. Some give from 2,000 to 3,000 mg. hours and repeat; others give from 5,000 to 6,000 mg. hours in one dose. Some never use needles in the growth; others use needles very frequently; some implant gold seeds. As noted, some always combine radium with x-ray therapy; others never do.

Lip cancers are not common in the average surgical practice. Fifty surgeons had operated on forty-four lip cancers in 1927; very few general surgeons had operated on more than one or two, and a very large number had not seen any during the year. Though 80 per cent of the surgeons from whom replies were received favored local excision of the growth always, nevertheless the impression was gained that the greater number of lip cancers were treated with radium. The reasons probably are that many persons refuse to have surgical operations on their lips, and radiologic handling of these cases has improved in the past few years.

Of the 20 per cent who did not always excise the local growth, some surgeons excised only the extensive or radium resistant tumors; others used radium only in the early cases, preferring to excise the remainder. Most, but not all, radiologists preferred radium to surgery in treating the local lesion.

The treatment of the neck glands varies again to the fullest possible extent. About four fifths of the surgeons preferred neck dissection to irradiation. The remainder, and practically all the radiologists, preferred irradiation. The types of operation and indications included: no neck operation in early cases; routine submaxillary triangle dissection, one or both sides, in all cases; submaxillary triangle dissection only if glands were palpable; more or less complete block dissection sometimes with, sometimes without, deep therapy or radium, used occasionally as a routine, generally when the submaxillary glands were involved.

MEDICAL DIAGNOSIS OF CANCER

Most of the surgeons stated that the majority of physicians recognized the significance of a lump in the breast on the first examination, and that a definite improvement in early diagnosis had been noted in the past five years. In spite of this, their answers were uniformly that from 60 to 80 per cent of their patients already had axillary involvement at the time of operation. This must mean that further efforts at lay education are needed, for the significance of a lump in the breast, one of the most easily taught popular signs of cancer, is not known nearly as widely as it should be.

Cancers of the cervix invariably were seen at a late stage, and there was not nearly the appreciation on the part of the medical profession of the significance of vaginal bleeding that there was of the lump in the breast. As noted earlier in the report, the clinical picture of what might be early cancer of the alimentary canal was not appreciated.

PATHOLOGISTS

The matter of tissue diagnosis involves so much of the personal equation that any attempt at evaluation is difficult. Dr. Ewing has said that what cancer is, distinguished from what it is not, as told by the pathologist, is the most pressing problem in cancer control today. Most hospitals, even in small communities, now have well equipped laboratories, which are in many instances under the direction of able men. Often the total number of specimens of cancer which they see in the course of a year is very small. Such communities would be much better off, as regards the pathologic diagnosis of cancer, if the total laboratory experience were pooled, either by one pathologist examining all the tissues, or by the several pathologists seeing and diagnosing each others' specimens. Accurate microscopic diagnosis of cancer, as patients are coming earlier, is a matter of continued practice just as is surgical technic.

RECORDS AND FOLLOW-UP

Most hospitals now have adequate record systems and cross indexes. The influence of the American College of Surgeons is decidedly felt. Few, however, maintain follow-up systems. Private group clinics see the value of spending money for follow-up systems. The state of Pennsylvania requires each hospital to follow up its cases and to ascertain the end-results. A few individual surgeons have follow-up systems of their own. This represents only a small proportion of the institutions and individuals visited.

The record room clerks in most hospitals are busy and overworked with routine matters, and the hospital has not seen the value of spending money for follow-up work.

Roentgen-ray departments, newly interested in cancer and often treating a large number of cases, are more apt to follow their results, and a few very fine follow-up systems were seen. On the other hand, in two instances in which nearly a gram of radium in addition to deep therapy equipment had been used, there was no definite follow-up to determine just what this expensive equipment was doing for the patients.

PROVISION FOR CHRONIC INVALIDS AND PERSONS OF MODERATE MEANS

As noted, any hospital shortage for acute cases is rapidly being met. This is not so for the chronic invalid. The answers were quite regularly that very meager facilities existed for chronic invalids and none were contemplated. The county almshouse is usually the only place to which the patient with hopeless cancer can go. In only one or two instances were plans being promulgated to remedy this need.

Of all the surgeons, hospital superintendents and others questioned, only two stated that the person of very moderate means had any difficulty in obtaining the best service available for the diagnosis or treatment of a malignant condition. The answer usually was that the best physicians in the community were quite willing to reduce their fees in order to place their services within the means of all. This undoubtedly took place in a large number of instances. However, previous experience has indicated that the possible expense of prolonged hospitalization and expensive surgery, possibly followed by irradiation, is frequently an important item in delaying the treatment of cancer. In view of the studies of Michael Davis on the problem confronting the average wage-earner in obtaining adequate medical service, this uniform medical opinion to the contrary was surprising.

TABLE 3.—*Some of the Reported Possibilities of Treatment in Early Carcinoma* *

Body Region	"Cures," per Cent	Years	Operation Mortality, per Cent	No. of Cases	Extent of Growth and Treatment	Reference
1. Lip.....	90.3	5 to 8	..	98	Glands not involved; primary complete operation; local excision of growth, removal of glands draining lip	Mayo Clinic; Sistrunk: Ann. Surg. **73**: 521 (May) 1921
	88	3	0	71	Same conditions and treatment.....	Massachusetts General Hospital; Shedden: Boston M. & S. J. **196**: 262 (Feb. 17) 1927
2. Breast.....	85	3	0.8	60	Axilla not yet invaded.....	Halsted's original series; Johns Hopkins Hosp.: Ann. Surg. **46**: 1 (July) 1907
	95	3	0	61	Axilla not yet invaded; radical Rodman or Halsted operation (deaths from other causes [all carefully traced] are excluded)	Pub. Health Report 31, British Ministry of Health (Leeds) 1926; cases chiefly from Leeds General Infirmary; 13 different surgeons
	92	5	0	55		
	90.9	10	0	39		
3. Stomach.....	52.5	3	7-10	..	Gastric resections; no glands involved.....	Mayo Clinic; Balfour: Tr. West. S. A., 1925
	18	3	7-10	..	Gastric resections; glands involved	
4. Rectum.....	73.7	5	3	73	Favorable small growths not yet invading muscular coat	Lockhart-Mummery: Brit. J. Surg. **14**: 110 (July) 1926
	44.8	..	..	96	Muscular coat involved, growths not unduly fixed, not extensive involvement of glands 37% mortality private cases; 14% mortality hospital cases; permanent colostomy; perineal excision; rectosigmoid growths not included	
5. Cervix.....	57	5	..	24	Early operable; uterus movable, no fixation; radium, radium plus operation	Ward, G. E.: J. A. M. A. **87**: 1697 (Nov. 20) 1926
	87	5	3	..	Incipient cases; radical operation.....	Weibel: Wein. klin. Wchnschr. **38**: 650 (June 4) 1925
	53	5	3	..	Mild cases; radical operation	

* Reproduced from Saltzstein, H. C.: Further Experiences with Publicity in Cancer, J. A. M. A. **89**: 1541 (Oct. 29) 1927.

COMMENT

Thus, cancer as generally treated in the earlier stages comes into the hands of many different surgeons and irradiation therapeutists, not many of whom see a large number of hopeful cases. Very few of these physicians follow their own patients accurately enough to know exactly what they have accomplished in five years.

Methods, both of operating and of giving radium and deep therapy treatments vary to the fullest extent, with little opportunity for a comparison of the results of the different procedures and dosages.

The average busy surgeon reluctantly hazards a guess as to how many breast cancers he has operated on during the past year. His quick impression generally far overstates the actual number. In the absence of follow-up procedures the impression of what has been accomplished at the end of five years must be quite inaccurate. This survey of necessity could not measure the average end-results of cancer treatment. However, other studies have indicated that they are poor, and one need only get the general pessimistic impressions of some surgeons and of many physicians and laymen concerning the cases they have known to see that this is so.

THE PROBLEM

Although a vast store of knowledge of the disease is accumulating, none of the laboratories concerned with cancer research see any startlingly new therapeutic aids on the horizon. Year books and reviews repeatedly state that "there is nothing new" or that "no new avenues have been opened in the field of cancer research." Probably, for some time to come, the cancer problem will be chiefly the problem of "wider utilization of existing knowledge." That existing knowledge can often satisfactorily cope with the disease, given certain more or less ideal conditions, is indicated in table 3.

One or two instances were noted in this survey in which results were much better than usual. Thus, the group clinic referred to showed three stomach resections, six colon resections with no deaths, and fifteen rectum resections with two deaths in 1927. Such results, however, do not represent 1 per cent of the total number of cancer patients treated in similar stages.

The natural question is: Would not more concentration of cases in the hands of fewer people produce better results? The natural answer is yes; but, practically considered, this problem is quite complex. In the first place, the early diagnosis of cancer embraces all fields of medicine, and as such it is difficult to concentrate. Secondly, the treatment is all inclusive, involving all the special body regions—none are exempt. No surgeons were met who wanted to, or did, take up cancer surgery as a specialty. Any specialization is more apt to be directed to one body region, as the chest, stomach or head, including all operations in that region. No man of any understanding of cancer wanted to be known as a radium specialist. There is some specialization evident in deep therapy, a few institutions having the x-ray therapy in charge of some one highly trained in physics or working with a physicist, and devoting his entire time to the radiation treatment of cancer. These physicians were of the opinion, distinctly opposed to the usual surgical opinion, that the only way to handle cases of cancer properly was in groups, and well concentrated. They uniformly reported that their practice in deep therapy had increased during the past two years, whereas many roentgenologists who had taken up therapy on the basis of previous diagnosis had not seen an increase and were not enthusiastic.

Thirdly, cancer patients seeking treatment are very apt to want private care if they possibly can afford it. As noted, most of the early care of cancer patients is in private hospitals or the private services of hospitals. Though a hospital may choose to group free cases, the grouping of private cases involves more organization than any but the private clinic or corporation presents in the present state of hospital development.

Fourthly, the best cancer clinics see preponderantly lip, mouth and face cancer (8 per cent of the total); cancer of the cervix (12 per cent) and a proportionately moderate number of cancers of the breast (10 per cent), with very few alimentary cancers (50 per cent) at a stage in which anything can be accomplished. The latter will probably continue to go to the busiest general surgeons, irrespective of how well such a surgeon understands the principles of the spread of cancer, and of how carefully he tries to eradicate the entire disease.

CONCLUSIONS

There are several suggested lines of organization which may be practical:

1. The records of cancer cases could be pooled through individual hospital follow-up reports, or through a central bureau embracing the hospitals of the city. This is not hard to start, and on the whole is not expensive, and a central follow-up for private patients if properly conducted will not violate a patient's rights of secrecy.

2. There should be more concentration on the laboratory diagnosis of cancer, especially in smaller communities.

3. Cancer clinics to function properly must be carefully established and must proceed slowly. They should be staffed chiefly by men having a proper pathologic understanding of cancer, who are interested in cancer, and who are capable of treating cancer or developing into experts. An x-ray therapeutist who does not have the pathologic approach to cancer is not the proper person to dominate the cancer clinic.

4. A few large hospitals in the East and some teaching institutions regularly try to develop their staff by allocating certain disease groups to certain physicians for a period of time. Thus, goiter, pelvic repair or stomach diseases are given to one man to treat for two years, five years, etc. In many hospitals the free service is large enough to permit doing this with cancer—either of certain body regions or in general.

5. Opportunities for better cooperation and organization present themselves differently in different communities. In one, the laboratories of the hospitals will lend themselves to pooling of their specimens and records. In another, a strong cancer council or an active health department may form a central record bureau. In another, a cancer clinic may form around an interested nucleus or a large amount of radium. The point to bear in mind is that only those understanding cancer and who have the time should be included, and there should not be too much duplication of effort, for patients with cancer amenable to treatment that may cure are not numerous in any community and are apt to seek the best private aid they can possibly afford.

In some communities it would be better if early cancers were not treated, the patients, all of whom can travel, being sent instead to a nearby center where facilities and the opportunity for wide experience with the disease are more easily obtained.

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Clinical Notes, Suggestions and New Instruments

AN APPARATUS FOR REGULATING THE RATE OF FLOW AND THE TEMPERATURE OF INTRAVENOUS INJECTIONS OF DEXTROSE (*d*-GLUCOSE) AND OTHER SOLUTIONS *

PAUL TITUS, M.D., AND PAUL DODDS, M.D., PITTSBURGH

Two grave and frequently harmful inaccuracies are common in the intravenous administration of dextrose solutions. These are (1) too rapid injection of the solution, at (2) too low degrees of temperature.

Certain known physiologic facts regarding the rate at which the body is able to take up and utilize injected dextrose are almost totally disregarded in many clinics, with the result that dosage becomes uncertain, large amounts of the injected dextrose are wasted by being "spilled out" through the kidneys, and the expected therapeutic effects are thus vitiated in direct ratio to the excessive speed at which the injection is given. Moreover, to inject cooling or cold solution may be a cause of reactions,[1] and certainly is not ideal treatment for such conditions as postoperative shock.

Wilder and Sansum[2] have shown that an individual can utilize only 0.8 Gm. per kilogram of body weight per hour of injected dextrose, and that to give more than this amount by too rapid a rate of injection results in its immediate excretion through the urine.

Based on a careful observation of clinical results, we now consider that the average single dose of dextrose to be given intravenously to an average sized adult (150 pounds, or 68 Kg.) should be 75 Gm. This is dissolved in 300 cc. of freshly double distilled water, a 25 per cent solution such as this being preferable, in our opinion, to the weaker solutions. If for any reason more dilution is desired, however, a sufficient quantity should be injected to give the patient at least 75 Gm. of the solid dextrose at a time. The reasons for this have been previously outlined elsewhere and need not be repeated here.

As a reason for our venturing to express decided opinions on such matters as dosage, concentration, rate of flow and indications for dextrose injections, we would point out that our interest in the development of the technic of such injections has been sustained over a long period of years during which the medical and surgical fields of usefulness of this therapeutic measure have been greatly extended; and that in this hospital at the present time we have occasion to use from 18,000 to 20,000 cc. of 25 or 50 per cent dextrose solution intravenously each month.[3]

Calculating from the rate of utilization established by the investigations of Wilder and Sansum, a 25 per cent solution should be injected into an average sized female adult (56 Kg.) at a rate of 3 cc. a minute. A slower rate of flow will eventually give the patient the full dose at an absorbable rate, but this should be the maximum speed. A full dose of 75 Gm. in 300 cc. thus requires 100 minutes, or approximately one and three-quarters hours. The corresponding rate for weaker or stronger degrees of concentration may easily be calculated; for example, a 10 per cent solution which carries 1 Gm. of dextrose in every 10 cc. of water may be given as rapidly as 7.5 cc. a minute to a person of this average weight, the total time required for a given amount of the solid sugar to be utilized being the same, of course, regardless of its dilution in solution.

If the patient weighs less than this average amount, there will be some slight loss on this account; but if he weighs more he merely fails to receive the maximum dose in the shortest possible time, eventually receiving and utilizing the entire amount.

In the majority of hospitals, however, it is seldom that more than twenty or thirty minutes is consumed in giving any such injections, and these are followed invariably by the appearance of quantities of sugar in the urine. It has been reasonably suggested that this may be a serious strain on the "sugar threshold" of the patient's kidneys. The argument of interns or clinicians utilizing such injections in their work to the effect that so time-consuming a procedure becomes unpractical may be a valid one but does not alter the fact that these injections must be given no faster than this definite rate in order to have an accurate dosage without loss through the kidneys.

The apparatus illustrated herewith has been so designed that the rate of flow of dextrose solution may be regulated

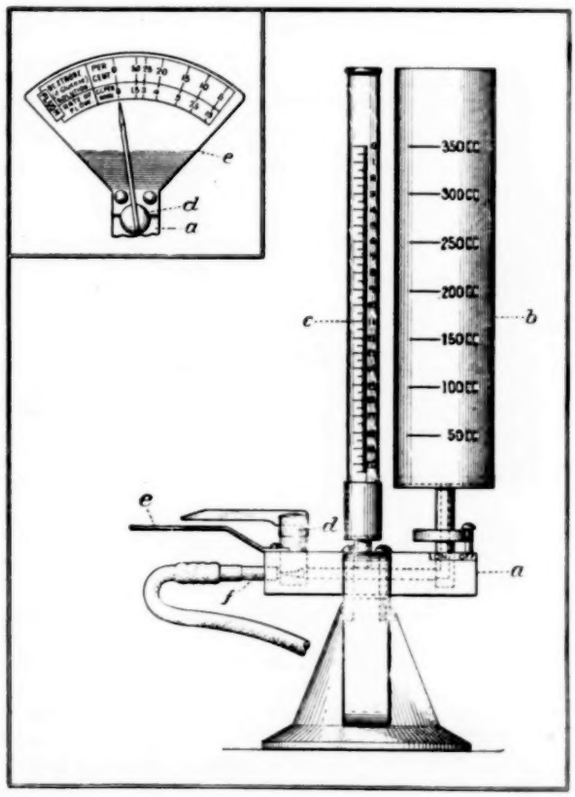


Fig. 1.—Apparatus for timing injections of dextrose solutions according to their concentration: *a*, weighted base with monel metal channel; *b*, monel metal infusion tank; *c*, titrating buret; *d*, valve with pointer; *e*, dial gage (also see inset).

to the proper speed for a given concentration. A simple dial scale with a pointer indicates not only the proper rate for a given concentration but also the point at which the handle should be set in order to obtain this rate of flow. With this apparatus it is possible to start the injection, having the dial properly set, and then to leave its continuance to the supervision of a nurse.

This apparatus is also suitable for use in the timed injection of other medicated solutions, such as physiologic solution of sodium chloride or arsphenamine. The actual rate of flow of these other solutions of lower specific gravity will be slightly faster than that indicated for dextrose because of higher viscosity of the latter but the flow-rate points on the dial for the weaker dextrose solutions will be approximately that for any other well diluted medicated solution. The titrating buret may be used if an accurately fixed rate is absolutely necessary.

* From the Department of Obstetrics and Gynecology, St. Margaret Memorial Hospital.

1. Titus, Paul; and Dodds, Paul: The Common Causes and the Prevention of Reactions Following Intravenous Injections of Dextrose (*d*-Glucose) Solutions, Am. J. Obst. & Gynec. **14:** 181 (Aug.) 1927.
2. Wilder, R. M., and Sansum, W. D.: *d*-Glucose Tolerance in Health and Disease, Arch. Int. Med. **19:** 311 (Feb.) 1917.
3. Titus, Paul; Hoffman, G. L., and Givens, M. H.: The Rôle of Carbohydrates in the Treatment of Toxemias of Early Pregnancy, J. A. M. A. **74:** 777 (March 20) 1920. Titus, Paul, and Givens, M. H.: Intravenous Injections of Glucose in Toxemia of Pregnancy, ibid. **78:** 92 (Jan. 14) 1922. Titus, Paul: Hyperemesis Gravidarum: Treatment by Intravenous Injections of Glucose, and Carbohydrate Feedings, ibid. **85:** 488 (Aug. 15) 1925. Titus, Paul; Dodds, Paul; and Willetts, E. W.: The Fluctuation in Blood Sugar During Eclampsia, Am. J. Obst. & Gynec. **15:** 303 (March) 1928.

The instrument as illustrated in figure 1 consists of a heavy metal base with a handle on which is a conduit or channel (*a*) constituting the main connection of the various parts of the system. The ground tip of the metal infusion tank (*b*) fits tightly into the first orifice of this channel.

The second orifice, identical in size and grinding with that for the tank, receives the tip of the titrating buret (*c*). There is a channeled valve (*d*) with a pointer for accurately regulating the rate of flow of the solution, and on the dial (*e*) is stamped a predetermined gage by which one may at will either flush the entire system or regulate the rate of flow merely by turning to the proper stop-marking.

The markings of this scale and their purpose are apparent at a glance, and the entire scale is reproduced in the inset of figure 1.

For half-grown children, the rate of flow should be reduced to one half, while for infants it should be reduced to at least one fourth.

The outlet of the instrument leads to the metal adapter (*f*), to which is attached the rubber tubing leading to the heating unit and the intravenous needle. The dial has been gaged and marked for flow through a number 19 needle. Any change from this size will slightly alter the flow rates.

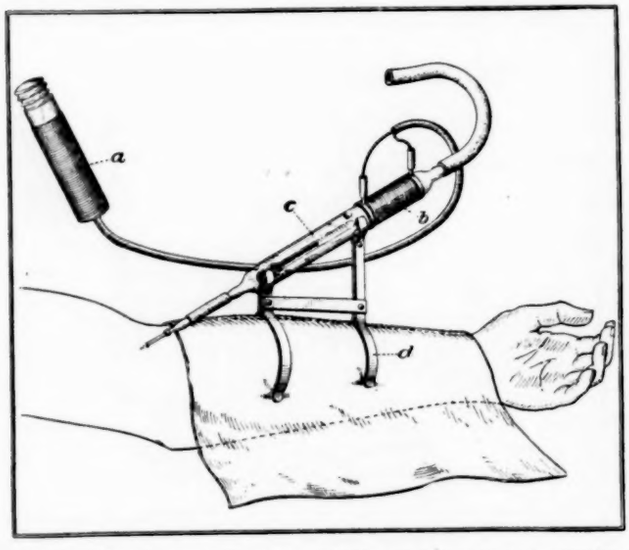


Fig. 2.—Electric heating unit: *a*, primary resistance coil; *b*, secondary resistance coil; *c*, glass infusion tube with thermometer; *d*, arm-clip holder.

The scale on the dial has been adjusted for flow with the base of the instrument about 8 inches above the patient's arm. The case in which the instrument is packed is 8 inches wide, so that this may be laid on its side on a table at the level of the patient's arm, the apparatus placed on it, and the correct height thus obtained conveniently and almost automatically.

Before use, the instrument should be sterilized in the autoclave or by boiling or by soaking in alcohol, and then assembled.

After the system has been well flushed with hot sterile distilled water, which serves also to heat the metal chambers, the preheated dextrose solution is poured into the metal infusion tank (*b*). This tank is turned so that the eye in its tip opens into the main channel, whereupon the fluid rises in the titrating buret or gage (*c*) to the same level as that of the tank.

The valve (*d*) is first opened to "flush" in order to fill the tubing with dextrose solution, and the pointer is then set at the proper mark for the given concentration of dextrose solution. As soon as all air bubbles are thus eliminated and the flow is established at the needle, the vein may be entered.

To prevent back flow of blood it is best to have the needle disconnected until after the tourniquet is removed. To prevent the wall of the vein from collapsing over the point of the needle, which should be size 19, this should be introduced with the bevel down.

Should any obstruction or interference to the flow occur, this becomes quickly apparent if the large infusion tank is turned so as to close off its eye, whereupon the more rapid rate of fall of the fluid level in the titrating buret (*c*) may be timed with the second hand of a watch. This rate should correspond with that point on the dial at which the pointer has been set.

The titrating buret, therefore, is a check on the dialed valve, and a visual means of gaging the working of the system at any time during the injection. If the flow is progressing properly, the large tank (*b*) is again rotated to open the eye in its tip and thus allow the fluid to continue from this main chamber. The titrating buret (*c*) is finely graduated in fractions of cubic centimeters on the front for titration, while on the side of the main tank are figures indicating the fluid contents in cubic centimeters at the same level. The small buret (*c*) thus becomes both a titrating buret and a level or volume gage of the contents of the main tank.

If this portion of the apparatus should become broken at any time, this being the only part made of glass, the large tank can be moved over into this orifice of the buret and injections given as usual, except without the close control afforded by the glass titrating gage. The glass is heavy pyrex, so that breakage is unusual. The metal parts have been made of chrome nickel alloy (monel metal) in order to obviate the possibility of any absorbable metallic elements being taken up by the solution.

English pure gum rubber tubing is used for the connections. This eliminates the unpleasant features of the ordinary rubber tubing, which often contains chemicals as well as loose solid matter, both of which frequently cause reactions. Moreover, ordinary rubber tubing quickly becomes kinked, and stiffened and unwieldy from repeated sterilization.

As previously suggested,[1] this tubing can be long enough so that one coil can be immersed in a basin of hot water to maintain the heat of the flowing solution, and the attachment of a Bovee infusion thermometer near the needle permits an accurate check on the actual temperature of the solution as it flows into the vein. This thermometer is built into the lumen of a glass connecting tube; the solution flows through the tube and over the thermometer.

More effective, however, is the electric heating unit which we have devised for use with this apparatus and which is illustrated in figure 2. This consists of a primary resistance coil (*a*) and a secondary heating coil (*b*) wound around a glass infusion tube (*c*), the coil ending in two metal contact points. The heating coil is insulated and sealed with an insulating cement which has been specially treated so as to make it both resistant to heat and insoluble in alcohol. The tube also contains a thermometer so that this portion of the outfit must be sterilized by immersion in alcohol, and not by boiling or autoclaving, either of which would ruin the thermometer.

The thermometer should be held at an angle of at least 45 degrees while in use to prevent its thread breaking. An arm-clip holder (*d*) has been devised for the heating element which not only holds it at the proper angle but also steadies the needle in the vein.

The electric connection is made through the primary coil to an electric light plug. The coil has been so wound as to produce fairly accurately the required amount of heat to maintain the flowing solution at 105 F., and the thermometer offers a visual control of this important matter.

In order to regulate the materials used in the manufacture of this apparatus and also to maintain reasonable prices for it, application has been made for patents. Arrangements have already been completed to have all such patents assigned through its board of trustees to the St. Margaret Memorial Hospital, Pittsburgh.

The apparatus is being manufactured and marketed by the Stupakoff Laboratories, Inc., Pittsburgh.

1015 Highland Building.

MEDICAL EDUCATION IN THE UNITED STATES

ANNUAL PRESENTATION OF EDUCATIONAL DATA FOR 1928 BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The statistics presented for the year ending June 30, 1928, are based on reports received from the medical colleges and other reliable sources. We acknowledge here the kind cooperation of the officers of the colleges who have made the compilation of these statistics possible.

STATISTICS OF COLLEGES

Table 1, pages 474 and 475, gives the colleges in session during 1927-1928; the population of the city; the rating given by the Council on Medical Education and Hospitals; the number of students, men and women, registered during the year; the number of 1928 graduates, men and women; the number of graduates holding collegiate degrees; the number of teachers for each college; the number of weeks of actual instruction in the college year; the total fees for each year; the executive officer of the college, and the dates of beginning and ending of the next session. The figures in heavy-faced type show the totals by states. Beginning on page 491 are given the essential facts concerning all medical colleges arranged by states.

HOME STATES OF MEDICAL STUDENTS

Table 2, pages 476 and 477, shows from what states the students came who were in attendance at each medical college during the session of 1927-1928. The states having medical colleges contribute larger numbers of students than those which have no medical colleges.

The state furnishing the largest number of students this year was New York with 2,837, followed by Pennsylvania with 1,687, Illinois with 1,347, and Ohio with 1,222. Of the twelve states that do not have medical schools, four furnished more than 100 students, these being New Jersey, 662; Washington, 134; Rhode Island, 119, and Florida, 113. Of these noncollege states, New Mexico had fifteen, Nevada fourteen and Wyoming ten. There were 152 students who came from government possessions, Hawaii, Porto Rico and the Philippine Islands, and 295 students came from foreign countries.

NUMBER OF STUDENTS BY CLASSES

In table 3, page 478, the students enrolled in each college are shown by classes. The total attendance for the first year was 6,199, or 190 more than last year; for the second year, 5,190 or 197 more than last year; for the third year, 4,646, or 136 more than last year, while in the fourth year there were 4,510, or 360 more than in 1927.

NUMBER OF MEDICAL STUDENTS

The total number of medical students (table 4) in the United States for the year ending June 30, 1928, excluding premedical, special and postgraduate students, was 20,545, an increase of 883 over last year. This is the largest enrolment of students since 1910, eighteen years ago. There has been an average increase in enrolment since 1919 of about 1,000 students each year.

NUMBER OF MEDICAL GRADUATES

The total number of graduates (table 5) for the year ending June 30, 1928, was 4,262, or 227 more than last year. Of the 4,262 medical graduates (table 6) 2,708, or 222 more than last year, had also obtained degrees in arts and sciences. This year 63.6 per cent of all graduates held collegiate degrees, as compared with only 15.3 per cent of the graduates in 1910. Of the 4,070 nonsectarian school graduates, 2,653, or 65.2 per cent, were reported to have baccalaureate degrees; of the 123 homeopathic graduates, forty-three, or 35.8 per cent, and of the fifty-five eclectic graduates, twelve, or 21.8 per cent, had baccalaureate degrees. As noted in table 8, of the 2,708 graduates holding baccalaureate degrees, 376, the largest number, came from the Illinois medical colleges. The New York schools reported 313; Pennsylvania, 291; Ohio, 167, and Massachusetts, 164. All the better medical schools are now requiring two or more years of college work for admission, which brings more students within reach of the combined courses for the B.S. and M.D. degrees.

TABLE 4.—*Medical College Attendance*

Year	Non-sectarian	Homeopathic	Eclectic	Physio-Med.	Nondescript	Total
1880	9,776	1,220	880	...	...	11,876
1890	13,521	1,164	719	...	...	15,404
1900	22,710	1,999	522	...	...	25,171
1904	23,662	1,309	1,014	123	234	28,142
1910	20,136	867	455	49	19	21,526
1915	13,914	736	241	...	...	14,891
1919	12,137	397	86	...	310	12,930
1920	12,930	386	93	...	389	13,798
1925	17,652	410	148	...	...	18,200
1926	18,092	458	253	...	37	18,840
1927	18,835	539	248	...	40	19,662
1928	19,646	640	219	...	40	20,545

MEDICAL SCHOOLS AND BACCALAUREATE DEGREES

Table 6 shows for various medical schools the percentage of their graduates this year who had also obtained baccalaureate degrees either prior to entering the medical school or, through combined courses, at the end of the first, second, third or fourth years of the medical course. In the fourth column is given the percentage of all graduates who have not obtained baccalaureate degrees. As noted, the colleges are arranged emphasizing those whose graduating classes were most lacking in baccalaureate degrees. As will be noted, of all students graduating from the Detroit College of Medicine and Surgery, only four held baccalaureate degrees, while thirty-two, or 88.9 per cent, did not hold such degrees, followed by Temple University, of whose graduates 85.7 per cent lacked such degrees, and by Tufts College, with 84.1 per cent.

At the other extreme are five medical schools for which all graduates held baccalaureate degrees, these being the medical schools of the Universities of Minnesota and Oregon and of Stanford, Cornell and Johns Hopkins Universities.

As a rule, medical schools closely affiliated with junior colleges or others having special classes for premedical students have the smallest numbers of students holding baccalaureate degrees. The best premedical preparation, it is believed, is that obtained by students

(Continued on page 476)

TABLE 1.—*Statistics of Medical Colleges in the United States and Canada*

Marginal No.	NAME AND LOCATION OF COLLEGE	Population of City Where College is Located (Census Bureau Estimate of 1926)‡	Classification by Council on Med. Education	Number of Students Registered, 1927-28		Graduates, 1928		Graduates with A.B., B.S. or Ph.B.	No. of Teachers	Weeks in College Year	Total Fees [Dollars]				Executive Officer	Session of 1928-29		Marginal No.
				Men	Women	Men	Women				1st Year	2d Year	3d Year	4th Year		Begins 1928	Ends 1929	
	ALABAMA			**89**	**1**	..	..	..										
1	University of Alabama School of Medicine, University (Tuscaloosa)*	13,083	A	89	1	..	..	..	14	34	222	222	...	...	Stuart Graves, M.D., Dean	Sept. 10	May 28	1
	ARKANSAS			**134**	..	**29**	..	**22**										
2	University of Arkansas School of Medicine, Little Rock [1]	75,900	A	134	..	29	..	22	65	34	120	115	110	110	Frank Vinsonhaler, M.D., Dean	Sept. 12	May 28	2
	CALIFORNIA			**659**	**77**	**98**	**23**	**106**										
3	College of Medical Evangelists, Los Angeles	576,673	A	306	30	34	3	23	199	38	253	245	329	313	Newton Evans, M.D., Dean	Sept. 4	June 23	3
4	Stanford University School of Medicine, San Francisco	567,000	A	174	18	31	7	38	181	33	330	314	306	306	William Ophüls, M.D., Dean	Oct. 2	June 12	4
5	University of California Medical School, San Francisco [1]	567,000	A	179	29	33	13	45	251	35	290	248	235	225	Langley Porter, M.D., Dean	Aug. 21	May 15	5
	COLORADO			**175**	**12**	**34**	**3**	**21**										
6	University of Colorado School of Medicine, Denver [1]	285,000	A	175	12	34	3	21	143	34	201	206	181	191	Maurice H. Rees, M.D., Dean	Sept. 24	Jun: 10	6
	CONNECTICUT			**199**	**15**	**50**	**1**	**46**										
7	Yale University School of Medicine, New Haven	182,000	A	199	15	50	1	46	164	34	305	300	300	320	Milton C. Winternitz, M.D., Dean	Sept. 27	June 12	7
	DISTRICT OF COLUMBIA			**699**	**21**	**187**	**3**	**88**										
8	Georgetown University School of Medicine, Washington	528,000	A	412	..	72	..	26	150	34	310	285	275	285	George M. Kober, M.D., Dean	Sept. 26	June 12	8
9	George Washington University Medical School, Washington	528,000	A	262	13	60	3	28	143	35	406	342	342	332	William C. Borden, M.D., Dean	Sept. 19	June 12	9
10	Howard University School of Medicine, Washington	528,000	A	225	8	55	..	34	58	33	213	208	208	215	Edward A. Balloch, M.D., Dean	Oct. 1	June 7	10
	GEORGIA			**340**	**4**	**96**	**1**	**45**										
11	Emory University School of Medicine, Atlanta	203,550	A	202	..	61	..	35	131	33	260	250	250	275	Russell H. Oppenheimer, M.D., Dean	Sept. 26	June 4	11
12	University of Georgia Medical Department, Augusta [1]	55,700	A	138	4	35	1	10	72	33	105	100	100	100	William H. Goodrich, M.D., Dean	Sept. 22	June 3	12
	ILLINOIS			**2023**	**104**	**440**	**28**	**376**										
13	Chicago Medical School, Chicago	3,048,000	C-	132	9	31	3	25	105	34	300	300	300	300	John E. Coe, Act. Dean	Oct. 1	June 15	13
14	Loyola University School of Medicine, Chicago	3,048,000	A	421	18	69	3	64	172	34	300	300	300	300	Louis D. Moorhead, M.D., Dean	Oct. 1	June 15	14
15	Northwestern University Medical School, Chicago	3,048,000	A	470	8	121	..	75	282	34	355	355	355	355	Irving S. Cutter, M.D., Dean	Oct. 2	June 17	15
16	University of Chicago, Rush Medical College	3,048,000	A	551	49	115	19	129	263	34	310	300	315	325	B. C. H. Harvey, M.B., Dean, Med. Students	Oct. 1	June 12	16
17	University of Illinois College of Medicine, Chicago [1]	3,048,000	A	449	29	104	3	83	242	33	165	165	165	170	David John Davis, M.D., Dean	Oct. 1	June 8	17
	INDIANA			**406**	**11**	**89**	**3**	**84**										
18	Indiana University School of Medicine, Bloomington-Indianapolis [1]	367,000	A	406	11	89	3	84	205	36	190	183	183	183	Charles P. Emerson, M.D., Dean	Sept. 10	June 10	18
	IOWA			**448**	**15**	**97**	**1**	**65**										
19	State University of Iowa College of Medicine, Iowa City [1]	11,691	A	448	15	97	1	65	94	34	196	186	186	201	Henry S. Houghton, M.D., Dean	Sept. 17	June 3	19
	KANSAS			**196**	**12**	**35**	**1**	**31**										
20	University of Kansas School of Medicine, Lawrence-Kansas City [1,2]	492,000	A	196	12	35	1	31	114	35	162	154	155	160	Harry R. Wahl, M.D., Dean	Sept. 20	June 10	20
	KENTUCKY			**278**	**5**	**64**	**1**	**31**										
21	University of Louisville School of Medicine, Louisville	311,000	A	278	5	64	1	31	119	34	315	315	320	330	The Dean	Sept. 17	May 31	21
	LOUISIANA			**412**	**14**	**96**	**4**	**41**										
22	Tulane University of Louisiana School of Medicine, New Orleans	419,000	A	412	14	96	4	41	151	34	305	295	280	310	Charles C. Bass, M.D., Dean	Sept. 27	June 12	22
	MARYLAND			**624**	**47**	**142**	**9**	**108**										
23	Johns Hopkins University School of Medicine, Baltimore	808,000	A	245	35	63	8	71	300	33	410	410	410	410	Lewis H. Weed, M.D., Dean	Oct. 2	June 11	23
24	University of Maryland Sch. of Med. & Coll. of P. & S., Baltimore [1]	808,000	A	379	12	79	1	37	220	33	330	320	320	330	J. M. H. Rowland, M.D., Dean	Oct. 1	June 8	24
	MASSACHUSETTS			**1353**	**56**	**295**	**11**	**164**										
25	Boston University School of Medicine, Boston	787,000	A	185	20	39	2	21	158	35	356	331	331	341	Alexander S. Begg, M.D., Dean	Sept. 26	June 17	25
26	College of Physicians and Surgeons, Boston [3]	787,000	C <	47	3	7	..	..	...	..	125	155	125	120	.....	.....	.....	26
27	Harvard University Medical School, Boston	787,000	A	521	..	131	..	126	374	36	405	400	400	400	David L. Edsall, M.D., Dean	Sept. 24	June 20	27
28	Tufts College Medical School, Boston	787,000	A	461	28	101	6	17	186	35	355	350	350	360	Albert W. Stearns, M.D., Dean	Sept. 19	June 8	28
29	Middlesex College of Medicine and Surgery, Cambridge.—E [4]	122,000	C-	144	5	17	3	..	...	..	165	185	210	185	.....	.....	.....	29
	MICHIGAN			**876**	**46**	**136**	**4**	**59**										
30	University of Michigan Medical School, Ann Arbor [1]	22,178	A	617	41	100	4	55	128	36	198	193	193	191	Hugh Cabot, M.D., Dean	Sept. 17	June 17	30
31	Detroit College of Medicine and Surgery, Detroit [1]	1,290,000	A	259	5	36	..	4	134	35	200	200	200	200	W. H. MacCraken, M.D., Dean	Sept. 27	June 21	31
	MINNESOTA			**439**	**22**	**101**	**11**	**112**										
32	University of Minnesota Medical School, Minneapolis [1]	434,000	A	439	22	101	11	112	319	34	195	195	195	195	Elias P. Lyon, M.D., Dean	Oct. 1	June 15	32
	MISSISSIPPI			**64**	**2**	..	..	..										
33	University of Mississippi School of Medicine, University (Oxford)* [1]	2,150	A	64	2	..	..	..	24	34	163	163	...	...	Joseph O. Crider, M.D., Dean	Sept. 19	June 4	33
	MISSOURI			**918**	**16**	**177**	**4**	**101**										
34	University of Missouri School of Medicine, Columbia* [1]	10,634	A	75	1	..	..	..	31	35	136	126	...	...	Guy L. Noyes, M.D., Dean	Sept. 11	June 5	34
35	American Medical University, Kansas City.—E [5]	492,000	..	...	...	...	...	...	...	...	...	...	...	...	.....	.....	.....	35
36	Kansas City Univ. of Physicians and Surgeons, Kansas City.—N [2,5,6]	492,000	C <	37	3	12	2	...	..	..	...	...	...	...	.....	.....	.....	36
37	Missouri College of Medicine and Science, St. Louis [7]	830,000	..	...	...	...	...	...	...	...	...	...	...	...	.....	.....	.....	37
38	St. Louis University School of Medicine, St. Louis	830,000	A	512	..	93	..	61	267	32	380	375	375	395	Alphonse M. Schwitalla, Ph.D., Dean	Oct. 1	June 1	38
39	Washington University School of Medicine, St. Louis	830,000	A	294	12	72	2	40	201	34	349	344	344	349	McKim Marriott, M.D., Dean	Sept. 24	June 11	39
	NEBRASKA			**492**	**8**	**106**	**4**	**66**										
40	Creighton University School of Medicine, Omaha	215,400	A	198	1	45	..	35	80	33	265	255	235	240	Hermann von W. Schulte, M.D., Dean	Sept. 27	June 6	40
41	University of Nebraska College of Medicine, Omaha	215,400	A	294	7	61	4	51	130	35	212	207	207	207	J. Jay Keegan, M.D., Dean	Sept. 14	June 8	41
	NEW HAMPSHIRE			**37**	..	..	..	..										
42	Dartmouth Medical School, Hanover*	1,551	A	37	..	..	..	..	18	36	400	410	...	...	John P. Bowler, M.D., Dean	Sept. 20	June 18	42
	NEW YORK			**2318**	**144**	**496**	**39**	**313**										
43	Albany Medical College, Albany	119,000	A	109	3	24	2	14	78	34	320	315	305	305	Thomas Ordway, M.D., Dean	Sept. 24	June 10	43
44	University of Buffalo School of Medicine, Buffalo	544,000	A	263	7	56	3	15	195	35	427	417	417	427	Edward W. Koch, M.D., Act. Dean	Sept. 19	June 4	44
45	Columbia University College of Phys. and Surgs., New York City	5,924,000	A	374	42	81	11	81	547	33	535	526	520	540	William Darrach, M.D., Dean	Sept. 26	June 4	45
46	Cornell University Medical College, New York City	5,924,000	A	199	34	53	11	64	221	34	510	500	500	525	G. Canby Robinson, M.D., Dean	Oct. 1	June 13	46

47	Long Island College Hospital, New York City-Brooklyn	2,240,000	A	418	10	97	5	44	241	32	545	560	530	550	Adam M. Miller, A.M., Dean	Oct. 1	June 1	47
48	New York Homeopathic Medical College and Flower Hospital.—H	5,921,600	B	292	9	59	2	10	134	34	490	480	470	485	Claude A. Burritt, M.D., Dean	Sept. 17	June 1	48
49	University and Bellevue Hospital Medical College, New York City	5,924,000	A	430	18	93	2	76	232	35	535	523	512	530	Samuel A. Brown, M.D., Dean	Sept. 19	June 12	49
50	University of Rochester School of Medicine, Rochester	321,000	A	69	8	..	..	..	118	36	300	300	300	300	George H. Whipple, M.D., Dean	Sept. 20	June 17	50
51	Syracuse University College of Medicine, Syracuse	184,000	A	164	13	33	3	9	157	35	400	400	400	410	Herman G. Weiskotten, M.D., Dean	Sept. 21	June 10	51
	NORTH CAROLINA			**140**	**1**	..	..	..										
52	University of North Carolina School of Medicine, Chapel Hill*	1,483	A	80	1	..	..	..	10	34	220	220	...	...	I. H. Manning, M.D., Dean	Sept. 20	June 6	52
53	Wake Forest College School of Medicine, Wake Forest*	1,425	A	60	..	..	..	..	16	35	220	225	...	...	Thurman D. Kitchin, M.D., Dean	Sept. 10	May 31	53
	NORTH DAKOTA			**48**	**1**	..	..	..										
54	Univ. of North Dakota School of Med., University (Grand Forks)*[1]	14,811	A	48	1	..	..	..	14	35	65	65	...	...	Harley E. French, M.D., Dean	Sept. 17	June 11	54
	OHIO			**866**	**46**	**224**	**12**	**167**										
55	Eclectic Medical College, Cincinnati.—E.[8]	411,000	B	70	..	35	..	12	46	32	...	...	210	210	Rolla L. Thomas, M.D., Dean	Sept. 20	May 20	55
56	University of Cincinnati College of Medicine[1]	411,000	A	258	10	62	3	44	226	35	310	310	300	320	Arthur C. Bachmeyer, M.D., Dean	Sept. 24	June 15	56
57	Western Reserve University School of Medicine, Cleveland	960,000	A	228	16	52	6	56	194	34	325	310	300	310	Carl A. Hamann, M.D., Dean	Sept. 27	June 13	57
58	Ohio State University College of Medicine, Columbus[1]	285,000	A	310	20	75	3	55	108	33	193	183	183	183	John H. J. Upham, M.D., Dean	Oct. 2	June 11	58
	OKLAHOMA			**183**	**5**	**39**	**2**	**39**										
59	University of Oklahoma School of Medicine, Oklahoma City[1]	91,295	A	183	5	39	2	39	90	34	113	94	21	21	LeRoy Long, M.D., Dean	Sept. 17	June 4	59
	OREGON			**211**	**15**	**45**	**2**	**47**										
60	University of Oregon Medical School, Portland[1]	258,288	A	211	15	45	2	47	180	33	200	195	190	190	Richard B. Dilehunt, M.D., Dean	Oct. 3	June 8	60
	PENNSYLVANIA			**1849**	**120**	**439**	**20**	**291**										
61	Hahnemann Medical College and Hospital of Philadelphia.—H	2,008,000	A	339	...	62	..	33	130	33	355	352	352	375	William A. Pearson, M.D., Dean	Oct. 1	June 6	61
62	Jefferson Medical College of Philadelphia	2,008,000	A	589	...	144	..	67	201	34	440	430	425	425	Ross V. Patterson, M.D., Dean	Sept. 24	June 7	62
63	Temple University School of Medicine, Philadelphia	2,008,000	A	213	1	49	..	7	147	35	295	280	280	280	Frank C. Hammond, M.D., Dean	Sept. 19	June 13	63
64	University of Pennsylvania School of Medicine, Philadelphia	2,008,000	A	469	14	131	5	130	270	35	420	400	400	400	William Pepper, M.D., Dean	Sept. 28	June 19	64
65	Woman's Medical College of Pennsylvania, Philadelphia	2,008,000	A	...	90	...	11	5	82	34	300	300	300	275	Martha Tracy, M.D., Dean	Sept. 26	June 12	65
66	University of Pittsburgh School of Medicine, Pittsburgh	637,000	A	239	15	53	4	49	199	34	390	375	375	385	Raleigh R. Huggins, M.D., Dean	Sept. 24	June 12	66
	SOUTH CAROLINA			**152**	**7**	**41**	..	**12**										
67	Medical College of the State of South Carolina, Charleston	74,100	A	152	7	41	..	12	63	34	180	180	180	180	Robert Wilson, M.D., Dean	Sept. 21	June 6	67
	SOUTH DAKOTA			**46**	..	..	..	..										
68	University of South Dakota School of Medicine, Vermilion* [1]	2,590	A	46	..	..	..	..	11	36	100	100	...	...	George R. Albertson, M.D., Dean	Sept. 17	June 15	68
	TENNESSEE			**721**	**16**	**153**	**3**	**86**										
69	University of Tennessee College of Medicine, Memphis[1]	177,000	A	335	7	61	2	24	161	34	172	165	150	167	Orren W. Hyman, Ph.D., Admin. Officer	Oct. 1	June 15	69
70	Meharry Medical College, Nashville	137,000	A	209	2	45	1	28	45	31	198	190	190	200	John J. Mullowney, M.D., Pres.	Oct. 1	May 23	70
71	Vanderbilt University School of Medicine, Nashville	137,000	A	177	7	47	..	34	164	34	315	315	315	320	Waller S. Leathers, M.D., Dean	Sept. 25	June 12	71
	TEXAS			**568**	**30**	**96**	**5**	**46**										
72	Baylor University College of Medicine, Dallas	200,000	A	335	14	54	4	22	117	32	307	292	282	282	Walter H. Moursund, M.D., Dean	Sept. 24	May 27	72
73	University of Texas School of Medicine, Galveston[1]	49,100	A	233	16	42	1	24	55	32	78	78	66	78	George E. Bethel, M.D., Dean	Oct. 1	May 31	73
	UTAH			**55**	**2**	..	..	..										
74	University of Utah School of Medicine, Salt Lake City*	133,000	A	55	2	..	..	..	18	34	150	150	....	...	Ralph O. Porter, M.D., Dean	Sept. 24	June 8	74
	VERMONT			**119**	**11**	**25**	**4**	**11**										
75	University of Vermont College of Medicine, Burlington[1]	24,089	A	119	11	25	4	11	52	36	250	250	250	250	James N. Jenne, M.D., Dean	Sept. 21	June 17	75
	VIRGINIA			**590**	**16**	**143**	**4**	**57**										
76	Medical College of Virginia, Richmond[1]	189,000	A	351	7	89	3	29	141	34	305	305	296	323	Manfred Call, M.D., Dean	Sept. 11	May 28	76
77	University of Virginia Dept. of Med., University (Charlottesville)[1]	11,211	A	239	9	54	1	28	67	36	290	290	265	255	James C. Flippin, M.D., Dean	Sept. 13	June 11	77
	WEST VIRGINIA			**106**	**2**	..	..	..										
78	West Virginia University School of Medicine, Morgantown* [1]	13,811	A	106	2	..	..	..	20	34	115	115	...	...	John N. Simpson, M.D., Dean	Sept. 17	June 4	78
	WISCONSIN			**578**	**25**	**82**	**4**	**53**										
79	University of Wisconsin Medical School, Madison[1]	17,600	A	239	18	25	..	20	216	35	100	100	100	100	Charles R. Bardeen, M.D., Dean	Sept. 26	June 18	79
80	Marquette University School of Medicine, Milwaukee	517,000	A	339	7	57	4	33	144	34	313	303	303	283	Mrs. Mary L. Meizer, Registrar	Sept. 24	June 12	80
	PHILIPPINE ISLANDS			**930**	**53**	**80**	**12**	**6**										
81	University of the Philippines, College of Med. and Surg., Manila[9]	285,500	..	229	53	16	12	6	94	37	75	57	37	42	Fernando Calderon, M.D., Dean	June 11	Mar. 20	81
82	University of St. Thomas, College of Medicine and Surgery, Manila[10]	285,500	..	701	..	64	..	..	49	36	75	75	75	75	Jose L. de Castro, M.D., Dean	June 18	Mar. 21	82
	CANADA[11]			**2556**	**119**	**429**	**15**	**149**										
83	University of Alberta Faculty of Medicine, Edmonton, Alta.	65,163	..	137	8	17	1	2	76	31	207	207	207	207	Allan C. Rankin, M.D., Dean	Sept. 26	May 15	83
84	Dalhousie University Faculty of Medicine, Halifax, N. S.	58,372	..	132	4	25	1	3	68	32	225	225	225	225	John Stewart, M.D., Dean	Sept. 11	May 14	84
85	Queen's University Faculty of Medicine, Kingston, Ont.	21,753	..	123	..	58	..	17	54	32	168	176	176	201	J. C. Connell, M.D., Dean	Sept. 26	May 29	85
86	University of Toronto Faculty of Medicine, Toronto, Ont.	521,893	..	662	69	96	8	29	269	32	171	221	306	221	Alexander Primrose, M.D., Dean	Sept. 25	May 25	86
87	University of Western Ontario Medical School, London, Ont.	60,950	..	130	6	30	..	2	75	33	175	175	183	208	A. B. Macallum, M.D., Dean	Sept. 25	May 31	87
88	McGill University Faculty of Medicine, Montreal, Que.	907,500	..	442	15	87	3	32	193	31	277	277	277	277	Charles F. Martin, M.D., Dean	Sept. 19	May 8	88
89	University of Montreal Medical Faculty, Montreal, Que.	907,500	..	2.8	1	38	..	26	96	36	225	207	244	221	Louis de Lotbiniere Harwood, M.D., Dean	Sept. 15	June 15	89
90	Laval University Faculty of Medicine, Quebec, Que.[9]	95,193	..	221	..	31	..	30	58	36	160	160	160	160	Arthur Rousseau, M.D., Dean	Sept. 13	June 15	90
91	University of Manitoba Faculty of Medicine, Winnipeg, Man.	191,356	..	251	16	47	2	8	145	31	205	200	210	210	S. Willis Prowse, M.D., Dean	Oct. 1	May 26	91

E.—Eclectic; H.—Homeopathic; N.—Nondescript.

* Gives only the first two years of the medical course.

\# Where no estimates were made for 1926 the census figures of 1920 or the estimate census figures of 1925 are given.

1. The following universities make an additional charge for nonresidents: Arkansas, $100; California, $300; Colorado, $105; Georgia, $200; Illinois, $35; Indiana, $75; Iowa, $164; Kansas, $50; Maryland, $150; Michigan, $80; Detroit, $85; Minnesota, $30; Mississippi, $50; Missouri, $10; North Dakota, $70; Ohio, $105; Cincinnati, $100; Oklahoma, $87; Oregon, $60; South Dakota, $50; Tennessee, $125; Texas, $150; Vermont, $75; Virginia, $20; Richmond, $50; West Virginia, $250 and Wisconsin, $125.

2. The population given is for Kansas City, Kansas, and Kansas City, Missouri.

3. The number of students is approximate; the number of graduates exact.

4. The number of students and graduates is approximate.

5. This college is the successor of the Kansas City College of Medicine and Surgery whose charter was revoked June 23, 1926, because of its being involved in the infamous Missouri diploma-mill scandal in 1923-1925. It occupies the same site as its predecessor and is apparently being conducted by the same interests. From such information as is on file, it could not be rated higher than class C.

6. This college was formerly the Central College of Osteopathy; in 1916 it assumed the title Central College Medical Department. Secured new charter with present title in 1918 when Central College of Osteopathy was restored. Both institutions are now being maintained—apparently in the same buildings.

7. This was a title carried jointly with that of "St. Louis College of Physicians and Surgeons" on the last announcement published by the latter institution, and was obtained through a charter in 1926. The newly named institution, therefore, occupies the same site and is clearly operated by the same crowd as its predecessor. The revocation of the charter of the St. Louis College of Physicians and Surgeons was not brought about until May 23, 1927, but was clearly anticipated by those maintaining it because of its having been involved in the Missouri diploma-mill scandal of 1923-1925. It is quite evident, therefore, that it deserves no rating higher than that held by its predecessor.

8. No students admitted to the first year class for session of 1926-1927, second year class 1927-1928, no students will be enrolled in either the first, second or third year classes.

9. The figures given are for the session of 1926-1927.

10. The number of students is exact; the number of graduates approximate.

11. The population of Canadian cities, where medical colleges are located, was taken from the census figures of 1921, but in some cases 1925 or 1926 estimates are given.

(Continued from page 473)

in the courses leading to the degree of Bachelor of Arts or Science in the college or university attended. Students who have had the benefit of study on the university campus and have come in contact with students preparing for various other professions or lines of activity have had a wider knowledge of such professions and activities before selecting their own life work.

WOMEN IN MEDICINE

During the last year there were 929 women studying medicine, or thirty-five less than the year before. The percentage of women to all medical students this year is 4.5. There were 207 women graduates this year, eighteen more than last year. Of all the women matriculants, ninety were in attendance at and eleven graduated from the one medical college for women, while 839

TABLE 2.—*Distribution of Medical*

Marginal Number	NAME OF COLLEGE	1 Alabama.....277	2 Arizona.....22	3 Arkansas.....169	4 California.....667	5 Colorado.....172	6 Connecticut.....291	7 Delaware.....31	8 Dist. Columbia.225	9 Florida.....113	10 Georgia.....323	11 Idaho.....54	12 Illinois.....1,347	13 Indiana.....559	14 Iowa.....581	15 Kansas.....282	16 Kentucky.....282	17 Louisiana.....206	18 Maine.....61	19 Maryland.....261	20 Massachusetts..912	Marginal Number
1	University of Alabama School of Medicine	58	..	1	..	..	..	..	..	1	3	..	1	1	..	..	4	1	..	..	..	1
2	University of Arkansas School of Medicine	6	..	96	1	..	1	..	..	..	1	..	..	1	2	1	1	2	..	..	..	2
3	College of Medical Evangelists	..	..	1	73	5	1	..	9	3	..	3	9	5	7	10	2	1	2	1	6	3
4	Stanford University School of Medicine	..	1	..	161	2	..	..	..	..	1	2	..	..	..	1	..	..	..	..	1	4
5	University of California Medical School	..	..	..	206	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5
6	University of Colorado School of Medicine	1	..	1	10	121	1	..	1	..	..	..	5	..	..	6	..	..	..	..	..	6
7	Yale University School of Medicine	..	..	..	5	1	77	..	1	1	..	..	1	1	..	1	..	..	5	..	13	7
8	Georgetown University School of Medicine	..	..	..	1	..	23	..	51	2	..	1	..	..	..	..	1	..	1	7	22	8
9	George Washington University Medical School	2	..	..	1	..	6	..	84	..	1	4	1	1	..	..	2	..	1	6	2	9
10	Howard University School of Medicine	3	1	1	1	..	6	2	37	5	8	..	5	1	..	1	1	3	..	12	..	10
11	Emory University School of Medicine	39	..	..	..	..	1	..	..	15	111	..	1	..	..	..	3	1	..	..	..	11
12	University of Georgia Medical Department	..	..	..	..	..	..	..	..	..	134	..	..	..	..	..	..	..	..	..	..	12
13	Chicago Medical School	..	..	1	1	1	..	..	2	2	1	..	76	5	3	1	2	2	1	..	2	13
14	Loyola University School of Medicine	2	..	..	5	3	7	..	..	2	..	1	244	12	12	2	..	2	..	..	1	14
15	Northwestern University Medical School	6	5	1	26	2	..	..	..	..	2	6	165	14	16	18	1	1	..	..	1	15
16	University of Chicago, Rush Medical College	11	1	3	10	3	2	..	4	4	3	5	215	26	36	14	4	1	..	1	4	16
17	University of Illinois College of Medicine	..	..	..	3	2	..	..	..	..	..	1	422	3	3	..	1	..	..	..	1	17
18	Indiana University School of Medicine	2	..	..	..	..	..	..	..	..	..	..	1	403	..	..	1	..	..	..	..	18
19	State University of Iowa College of Medicine	..	1	..	2	..	..	..	..	..	..	1	5	..	415	2	..	..	..	..	2	19
20	University of Kansas School of Medicine	..	..	..	1	1	..	..	..	..	..	..	..	..	2	153	..	..	..	..	..	20
21	University of Louisville School of Medicine	8	..	3	1	..	2	..	..	1	..	3	8	15	1	2	139	..	..	..	..	21
22	Tulane University of Louisiana School of Medicine	40	4	15	10	..	1	1	..	29	12	..	..	2	..	1	3	155	..	1	1	22
23	Johns Hopkins University School of Medicine	9	..	1	7	..	14	1	7	1	7	2	8	1	1	1	1	3	3	37	11	23
24	Univ. of Maryland School of Med. & Coll. of P. & S.	2	..	..	..	..	12	1	3	3	..	..	..	..	..	..	..	..	1	161	1	24
25	Boston University School of Medicine	..	..	..	..	..	12	..	..	..	..	..	..	..	..	..	..	..	12	..	105	25
26	College of Physicians and Surgeons, Boston	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	26
27	Harvard University Medical School	10	1	1	17	5	15	1	1	2	9	2	18	5	6	5	2	..	14	3	140	27
28	Tufts College Medical School	..	..	..	1	..	36	..	..	..	..	..	..	..	..	..	..	..	8	..	323	28
29	Middlesex College of Medicine and Surgery.—E.†	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	149	29
30	University of Michigan Medical School	1	..	..	6	4	1	..	2	3	3	..	10	12	3	..	7	..	..	2	3	30
31	Detroit College of Medicine and Surgery	2	..	..	..	..	..	..	..	..	..	1	..	2	..	..	..	..	..	..	..	31
32	University of Minnesota Medical School	2	..	..	1	..	2	..	..	..	..	1	2	..	2	2	..	..	..	..	..	32
33	University of Mississippi School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	33
34	University of Missouri School of Medicine	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1	1	..	..	..	..	34
35	American Medical University, Kansas City.—E	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	35
36	Kansas City University of Physicians and Surgeons.—N.†	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	36
37	Missouri College of Medicine and Science	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	37
38	St. Louis University School of Medicine	3	3	..	31	3	6	..	2	4	..	2	42	9	6	14	2	7	..	1	3	38
39	Washington University School of Medicine	..	..	12	15	2	..	..	1	..	1	1	48	6	3	17	3	..	..	1	..	39
40	Creighton University School of Medicine	..	..	..	23	6	..	..	..	..	1	1	3	..	31	6	..	..	..	..	..	40
41	University of Nebraska College of Medicine	1	..	..	..	3	..	..	..	..	..	1	1	..	8	8	..	..	..	..	..	41
42	Dartmouth Medical School	..	..	..	1	2	2	..	2	..	..	..	..	..	..	..	..	..	1	..	6	42
43	Albany Medical College	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	1	..	4	43
44	University of Buffalo School of Medicine	..	..	..	1	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	1	44
45	Columbia University College of Physicians and Surgeons	1	2	..	2	1	12	..	2	1	1	..	..	..	..	1	..	..	1	3	10	45
46	Cornell University Medical College	2	..	..	4	..	3	..	..	..	..	..	..	..	1	1	2	..	2	..	3	46
47	Long Island College Hospital	..	..	..	..	..	3	..	..	..	..	..	..	2	..	..	1	..	..	..	1	47
48	New York Homeopathic Med. Coll. & Flower Hosp.—H.	..	..	..	..	..	1	..	..	1	..	..	1	1	..	..	..	..	..	..	..	48
49	University and Bellevue Hospital Medical College	..	..	..	1	..	5	..	..	3	..	..	..	1	1	..	..	..	..	..	..	49
50	University of Rochester School of Medicine	..	..	..	4	..	..	..	..	..	2	..	1	..	..	..	..	..	..	4	6	50
51	Syracuse University College of Medicine	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	51
52	University of North Carolina School of Medicine	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	52
53	Wake Forest College School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	53
54	University of North Dakota School of Medicine	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	54
55	Eclectic Medical College, Cincinnati.—E	..	..	..	2	..	1	..	..	..	..	..	2	3	..	..	10	..	..	..	..	55
56	University of Cincinnati College of Medicine	..	..	..	4	..	..	..	..	1	1	..	2	7	..	..	26	..	..	..	..	56
57	Western Reserve University School of Medicine	..	..	..	1	..	..	..	..	1	..	1	1	2	1	1	..	..	..	1	..	57
58	Ohio State University College of Medicine	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	58
59	University of Oklahoma School of Medicine	1	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	59
60	University of Oregon Medical School	..	1	..	7	..	..	..	..	..	..	4	..	..	..	..	..	..	..	1	..	60
61	Hahnemann Med. Coll. and Hospital of Philadelphia.—H.	..	..	..	..	..	3	2	1	..	..	..	1	5	..	..	3	..	..	1	1	61
62	Jefferson Medical College of Philadelphia	4	1	1	4	..	15	8	..	4	3	2	3	2	1	1	1	..	1	10	8	62
63	Temple University School of Medicine	..	..	..	1	..	2	2	..	1	..	..	..	..	..	..	1	..	..	..	1	63
64	University of Pennsylvania School of Medicine	7	..	..	4	2	2	10	1	7	1	2	2	3	..	2	3	..	2	2	5	64
65	Woman's Medical College of Pennsylvania	..	..	..	3	..	1	2	..	..	1	..	1	..	2	..	..	..	..	2	2	65
66	University of Pittsburgh School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	66
67	Medical College of the State of South Carolina	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	67
68	University of South Dakota School of Medicine	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1	..	..	..	..	1	68
69	University of Tennessee College of Medicine	25	..	15	1	..	1	..	..	2	2	..	2	..	..	1	14	7	..	..	..	69
70	Meharry Medical College	16	..	4	..	..	1	..	7	4	12	..	14	1	..	3	3	8	..	..	4	70
71	Vanderbilt University School of Medicine	19	..	7	1	..	1	..	..	2	3	1	1	3	..	2	28	2	..	..	..	71
72	Baylor University College of Medicine	3	..	4	1	..	..	..	..	..	..	..	1	..	1	1	1	9	..	1	..	72
73	University of Texas School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	73
74	University of Utah School of Medicine	..	..	..	2	1	..	..	..	..	..	5	..	..	..	..	..	..	..	..	..	74
75	University of Vermont College of Medicine	..	..	..	1	..	5	..	..	..	..	..	1	..	..	..	..	..	3	..	17	75
76	Medical College of Virginia	1	1	..	..	..	3	..	4	1	1	..	2	..	..	..	5	..	1	1	..	76
77	University of Virginia Department of Medicine	6	..	..	..	..	..	1	2	3	1	..	..	..	..	..	..	..	..	2	1	77
78	West Virginia University School of Medicine	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	78
79	University of Wisconsin Medical School	1	..	..	..	1	..	..	..	1	..	..	4	1	3	..	..	..	..	..	..	79
80	Marquette University School of Medicine	1	..	1	..	1	1	..	..	..	1	9	3	12	2	..	..	1	..	..	..	80
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

E.—Eclectic; H.—Homeopathic; N.—Nondescript.

† Figures and distribution are approximate.

(90.3 per cent) were matriculated in, and 196 (94.7 per cent) graduated from the coeducational colleges.

NUMBER OF COLLEGES

The number of medical colleges in each decade since 1850 is shown in table 7. The largest number was in 1906, when there were 162 medical schools. Largely through the merging of two or more schools into one, in a score or more of cities the number was decreased until in 1924 only seventy-nine medical schools remained. With the opening of the new medical school of the University of Rochester, N. Y., in 1925 the number was restored to eighty. Since then the Kansas City College of Medicine and Surgery and the St. Louis College of Physicians and Surgeons have been closed through the revocation of their charters, but their places were

Students by States

Marginal Number	Michigan.....861	Minnesota.....514	Mississippi.....211	Missouri.....519	Montana.....62	Nebraska.....376	Nevada.....14	New Hampshire.....52	New Jersey.....602	New Mexico.....15	New York.....2,857	North Carolina 407	North Dakota...99	Ohio.....1,222	Oklahoma.....238	Oregon.....240	Pennsylvania..1,687	Rhode Island...119	South Carolina 213	South Dakota..101	Tennessee.....327	Texas.....786	Utah.....114	Vermont.....86	Virginia.....465	Washington....134	West Virginia...242	Wisconsin.....647	Wyoming.....10	U. S. Possessions, Philippines, etc.152	Foreign.....395	Totals.....20,545	Marginal Number
1	..	..	5	..	..	..	..	..	..	..	7	1	..	2	..	3	..	..	..	..	3	2	..	..	1	..	..	..	..	2	4	90	1
2	1	..	..	3	..	..	..	..	..	..	8	..	..	2	3	..	..	..	..	..	1	2	..	..	1	..	..	1	..	..	..	134	2
3	15	14	1	3	2	7	1	1	3	3	5	..	4	4	3	14	6	..	1	5	8	10	2	2	..	19	..	6	..	9	50	336	3
4	..	..	..	..	..	1	..	3	..	..	..	..	1	1	..	2	1	..	..	..	..	1	2	..	..	..	4	..	1	3	3	192	4
5	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	208	5
6	1	..	1	7	..	1	1	..	1	1	5	2	..	2	..	1	..	..	..	..	..	5	..	..	..	1	2	1	1	8	187	6
7	1	3	..	1	..	..	..	2	14	1	45	1	..	4	1	..	14	2	..	..	..	3	..	1	2	..	2	3	..	3	5	214	7
8	2	2	..	..	1	..	..	2	54	..	107	2	..	12	..	..	83	17	1	..	..	..	..	..	5	1	4	..	..	7	3	412	8
9	..	1	..	1	..	..	..	..	25	1	74	5	1	5	1	..	13	1	..	1	..	3	2	..	12	1	..	..	..	15	2	275	9
10	2	..	3	3	..	..	..	..	13	..	32	9	..	8	1	..	18	..	7	..	2	6	..	..	14	..	4	..	..	..	24	233	10
11	..	..	6	..	..	1	..	..	..	..	1	10	..	1	..	..	1	..	5	..	1	1	..	..	..	..	11	..	..	1	1	202	11
12	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	1	..	..	..	..	2	1	142	12
13	6	2	..	..	..	1	..	..	4	..	5	..	..	..	..	..	3	..	2	1	..	2	..	..	1	..	2	5	..	6	1	141	13
14	20	6	..	3	2	2	..	..	5	..	25	..	1	21	1	..	18	..	..	1	..	3	2	..	..	2	3	10	..	6	15	439	14
15	16	17	6	12	7	8	1	..	4	1	3	..	10	12	9	3	4	..	..	10	2	6	10	..	..	17	2	39	1	7	6	478	15
16	30	8	1	12	7	9	1	..	4	1	10	7	17	22	5	2	10	1	..	9	2	13	8	1	1	4	12	39	..	5	12	600	16
17	2	3	1	4	..	..	..	..	..	..	2	..	2	1	..	..	1	..	..	2	3	1	3	..	..	..	1	3	..	..	3	469	17
18	..	..	..	..	..	..	..	..	..	..	2	..	..	2	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	4	..	417	18
19	1	4	..	5	..	2	..	..	3	1	5	..	1	1	2	..	..	..	..	3	..	..	..	..	..	1	1	..	..	..	5	463	19
20	..	1	..	31	..	..	..	..	1	..	6	..	..	2	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	3	5	208	20
21	1	5	3	6	1	..	..	..	2	..	9	3	..	39	1	..	3	1	..	1	3	2	1	..	..	..	15	..	..	1	3	283	21
22	2	..	37	4	..	..	..	..	4	..	20	16	2	..	2	..	..	..	..	..	4	48	..	..	..	..	2	..	..	1	9	426	22
23	7	1	1	1	1	..	..	2	15	..	36	11	1	13	2	1	29	1	2	..	2	11	1	1	12	2	4	4	..	..	4	280	23
24	..	..	..	..	..	..	..	2	30	..	81	9	1	8	..	..	37	3	4	..	..	1	1	..	3	1	17	..	..	6	3	391	24
25	3	..	..	..	..	..	..	6	7	..	29	..	..	1	..	..	4	14	..	..	..	..	..	1	1	2	..	..	..	4	4	205	25
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	26
27	6	4	..	12	2	4	1	5	16	1	53	8	..	18	2	4	20	15	2	1	3	11	10	6	9	9	7	25	..	..	10	521	27
28	1	1	..	..	1	..	..	14	13	..	47	..	..	1	..	..	5	23	..	..	..	1	..	2	..	..	..	1	..	2	9	489	28
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	149	29
30	423	3	..	4	5	1	..	..	17	2	22	2	..	69	1	2	21	1	..	1	1	3	..	..	..	3	2	5	..	..	13	658	30
31	252	..	..	..	..	..	..	..	..	..	..	..	..	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	214	31
32	4	391	..	1	10	1	..	..	..	..	2	1	10	1	..	..	1	..	..	7	..	..	..	..	..	4	..	11	1	1	3	461	32
33	..	..	64	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	66	33
34	..	..	..	66	..	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	1	..	76	34
35	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	35
36	..	..	..	40	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	40	36
37	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	37
38	11	9	1	133	10	1	1	..	9	1	44	..	2	82	4	1	22	3	..	3	2	9	1	..	..	8	4	4	..	6	3	512	38
39	..	2	2	132	..	..	1	..	2	..	2	7	..	6	7	2	..	..	..	1	3	5	1	..	1	14	..	1	..	5	2	306	39
40	2	5	1	2	4	74	..	..	..	..	2	..	..	4	1	4	2	..	..	15	..	..	2	..	..	7	..	1	1	..	1	199	40
41	..	3	..	3	2	253	..	..	..	..	..	..	1	..	1	1	1	..	..	4	..	..	..	..	..	1	..	..	3	6	..	301	41
42	..	..	..	1	..	..	..	2	2	..	11	..	..	..	..	..	4	1	..	..	..	..	..	1	..	..	..	..	..	..	1	37	42
43	..	..	..	..	..	..	..	..	2	..	101	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	112	43
44	1	..	..	..	..	..	..	..	1	..	244	..	..	3	..	..	12	..	..	..	..	..	..	..	..	2	1	..	..	..	2	270	44
45	1	1	2	..	..	1	..	3	60	..	267	2	..	2	..	1	9	1	3	..	2	2	5	2	..	..	4	..	9	2	416	45
46	..	1	..	1	..	..	1	2	34	..	157	1	..	4	..	..	4	3	..	..	1	..	..	..	..	1	..	2	..	1	2	233	46
47	1	..	..	..	..	1	..	..	36	..	372	2	..	..	..	..	6	1	..	..	..	..	..	..	..	..	..	..	..	2	..	428	47
48	..	..	..	..	..	..	..	..	16	..	276	..	..	1	..	..	2	1	..	..	..	..	..	..	..	1	..	..	..	..	..	301	48
49	..	..	..	..	..	..	..	1	55	..	367	4	..	2	..	..	4	1	..	..	..	..	..	..	..	..	1	..	..	1	1	448	49
50	..	..	..	..	1	..	1	..	..	..	37	..	..	10	..	..	5	..	1	..	..	..	..	..	..	..	..	..	..	..	5	77	50
51	..	..	..	..	..	..	..	..	12	..	137	2	..	2	..	..	6	2	..	..	..	..	2	1	1	..	1	..	..	3	6	177	51
52	..	..	..	..	..	..	..	..	..	..	..	75	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	81	52
53	..	..	..	..	..	..	..	..	..	..	..	58	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	60	53
54	..	3	..	..	..	..	..	..	..	..	..	..	40	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	2	..	49	54
55	2	..	1	..	..	1	..	..	2	..	8	..	..	28	..	..	7	..	..	..	1	..	..	..	..	1	1	..	..	..	70	55
56	2	..	..	..	..	..	..	..	..	..	2	3	..	208	..	..	6	..	..	..	1	..	..	..	..	2	..	..	1	2	268	56
57	..	..	..	..	..	1	1	..	..	..	6	2	..	190	..	..	22	..	..	..	1	..	..	..	2	..	5	1	1	1	2	244	57
58	..	..	..	..	..	1	..	..	..	..	2	..	..	324	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	330	58
59	..	..	1	2	..	..	..	..	1	..	..	..	..	..	175	..	1	1	..	..	..	2	..	..	..	..	..	..	..	1	1	188	59
60	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	196	..	..	..	..	..	..	1	..	..	13	..	..	..	1	2	226	60
61	4	1	..	..	..	..	..	1	65	..	20	..	..	10	..	..	210	2	..	..	..	1	..	..	1	..	..	..	..	2	6	339	61
62	2	..	5	5	2	2	..	1	38	..	17	36	1	26	..	2	314	15	6	..	3	7	3	..	4	3	10	1	..	8	9	589	62
63	..	..	..	..	..	..	..	1	17	..	8	2	..	3	..	..	173	..	..	..	..	..	..	..	..	1	1	..	..	..	..	214	63
64	4	1	3	4	..	1	1	1	35	..	14	38	..	14	..	..	238	..	2	..	10	10	10	1	8	8	4	11	..	3	7	483	64
65	2	3	..	..	..	1	..	1	4	..	16	1	..	3	..	..	31	1	1	..	..	1	..	..	3	2	1	..	..	1	4	90	65
66	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	252	..	..	..	..	..	..	..	..	..	..	..	..	..	..	254	66
67	..	..	..	..	..	..	..	..	1	..	1	5	..	1	..	..	1	1	146	..	..	..	..	..	1	..	..	..	..	..	..	159	67
68	..	2	..	..	..	1	..	..	..	..	3	..	1	..	..	1	1	..	..	32	..	..	..	..	..	..	..	..	..	1	..	46	68
69	..	..	33	8	..	..	..	..	1	..	10	4	..	2	7	..	..	..	..	..	189	14	..	..	1	1	2	..	..	..	..	342	69
70	10	..	9	3	..	..	..	..	6	..	10	11	..	9	..	..	13	1	14	..	10	18	..	..	9	..	2	..	..	9	1	211	70
71	..	..	13	1	..	..	..	..	3	..	4	5	..	3	3	..	1	1	3	1	52	13	..	..	6	..	1	1	..	..	3	184	71
72	..	..	1	1	..	..	..	..	1	2	2	..	..	..	4	..	..	..	..	..	1	312	..	..	..	..	..	..	..	..	3	349	72
73	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	249	..	..	..	..	..	..	..	..	..	249	73
74	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	47	..	..	..	..	..	..	..	..	57	74
75	1	..	..	..	..	..	..	6	6	..	19	..	..	..	..	..	..	2	..	..	..	..	..	67	..	..	..	..	..	1	1	130	75
76	..	..	1	..	..	..	..	..	5	..	4	56	..	4	..	..	14	1	4	..	4	..	..	..	207	..	33	..	..	..	5	358	76
77	1	..	9	..	..	..	..	..	9	..	17	6	..	..	..	..	1	..	5	..	11	3	..	..	158	..	8	..	..	..	4	248	77
78	1	..	..	..	..	..	..	..	..	..	1	..	..	7	..	..	19	..	..	..	..	..	..	..	..	..	74	..	..	4	..	108	78
79	4	5	..	1	1	1	..	..	1	..	2	..	..	1	..	..	1	..	..	1	..	1	..	..	..	..	..	226	..	..	1	257	79
80	16	11	..	2	2	..	..	..	..	..	11	..	3	13	1	1	4	2	..	2	..	..	..	..	..	2	..	240	..	2	2	346	80
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51		

promptly filled, respectively, by the newly chartered American Medical University and the Missouri College of Medicine and Science.

TABLE 3.—*Medical Students Shown by Classes*

Name of College	Enrolled During 1927-28				
	1st Year	2d Year	3d Year	4th Year	Totals
University of Alabama School of Medicine*	51	39	..	..	90
University of Arkansas School of Medicine	33	28	44	29	134
College of Medical Evangelists	114	88	69	65	336
Stanford University School of Medicine	50	49	45	48	192
University of California Medical School	60	59	47	42	208
University of Colorado School of Medicine	63	41	46	37	187
Yale University School of Medicine	55	64	43	52	214
Georgetown University School of Medicine	137	115	82	78	412
George Washington University Medical Sch.	89	70	69	56	275
Howard University School of Medicine	64	63	52	54	233
Emory University School of Medicine	55	44	42	61	202
University of Georgia Medical Dept	36	34	36	36	142
Chicago Medical School	41	29	35	36	141
Loyola University School of Medicine	148	101	101	89	439
Northwestern University Medical School	120	104	133	121	478
University of Chicago, Rush Medical Coll.	117	116	147	220	600
University of Illinois College of Medicine	128	102	118	121	469
Indiana University School of Medicine	114	111	100	92	417
State University of Iowa College of Med	110	123	100	100	463
University of Kansas School of Medicine	76	56	42	34	208
University of Louisville School of Medicine	87	63	68	65	283
Tulane Univ. of Louisiana School of Med.	127	89	108	102	426
Johns Hopkins Univ. School of Medicine	73	71	64	72	280
Univ. of Md. Sch. of Med. & Coll. of P.&S.	128	79	96	88	391
Boston University School of Medicine	61	52	51	41	205
College of Physicians & Surgeons, Boston†	24	11	8	7	50
Harvard University Medical School	125	127	135	134	521
Tufts College Medical School	145	124	113	107	489
Middlesex College of Med. and Surg.—E.†	28	44	41	36	149
University of Michigan Medical School	198	193	155	112	658
Detroit College of Medicine and Surgery	103	65	47	49	264
University of Minnesota Medical School	114	138	105	104	461
University of Mississippi School of Med.*	33	33	..	..	66
University of Missouri School of Medicine*	42	34	..	..	76
Kansas City Univ. of Phys. & Surgs.—N.†	7	9	10	14	40
St. Louis University School of Medicine	173	115	118	106	512
Washington University School of Medicine	78	72	79	77	306
Creighton University School of Medicine	56	48	50	45	199
University of Nebraska College of Medicine	91	74	70	66	301
Dartmouth Medical School*	20	17	..	..	37
Albany Medical College	40	22	21	26	112
University of Buffalo School of Medicine	78	65	66	61	270
Columbia Univ. Coll. of Phys. & Surgs	112	102	105	97	416
Cornell University Medical College	45	59	63	66	233
Long Island College Hospital	119	95	112	102	428
New York Homeopathic Medical College and Flower Hospital.—H.	100	90	50	61	301
University and Bellevue Hosp. Med. Coll	132	118	105	93	448
University of Rochester School of Medicine	31	25	21	..	77
Syracuse University College of Medicine	51	48	40	38	177
Univ. of North Carolina School of Med.*	39	42	..	..	81
Wake Forest College School of Medicine*	26	34	..	..	60
Univ. of North Dakota School of Medicine*	29	20	..	..	49
Eclectic Medical College, Cincinnati—E	..	..	35	35	70
University of Cincinnati College of Med	73	60	66	69	268
Western Reserve University School of Med.	73	61	52	58	244
Ohio State University College of Medicine	102	70	73	85	330
University of Oklahoma School of Medicine	53	55	39	41	188
University of Oregon Medical School	66	52	53	55	226
Hahnemann Medical College and Hospital of Philadelphia—H.	126	84	66	63	339
Jefferson Medical College of Philadelphia	168	134	143	144	589
Temple University School of Medicine	60	56	49	49	214
University of Pennsylvania School of Med.	111	101	135	136	483
Woman's Medical College of Pennsylvania	36	22	21	11	90
University of Pittsburgh School of Med	67	63	66	58	254
Medical Coll. of the State of S. Carolina	42	42	34	41	159
University of South Dakota Sch. of Med.*	29	17	..	..	46
University of Tennessee College of Medicine	122	84	73	63	342
Meharry Medical College	66	49	50	46	211
Vanderbilt University School of Medicine	48	46	42	48	184
Baylor University College of Medicine	120	103	68	58	349
University of Texas School of Medicine	107	47	51	44	249
University of Utah School of Medicine*	29	28	..	..	57
University of Vermont College of Medicine	39	32	30	29	130
Medical College of Virginia	95	76	93	94	358
University of Virginia Dept. of Medicine	68	66	59	55	248
West Virginia Univ. School of Medicine*	62	46	..	..	108
University of Wisconsin Medical School	107	81	40	29	257
Marquette University School of Medicine	124	101	62	59	346
Totals for 1928	6,199	5,190	4,646	4,510	20,545
Totals for 1927	6,009	4,993	4,510	4,150	19,662
Totals for 1926	5,753	4,779	4,201	4,107	18,840

E.—Eclectic; H.—Homeopathic; N.—Nondescript.
* Gives only the first two years of the medical course.
† Figures and distribution are approximate.

TABLE 5.—*Medical College Graduates*

Year	Non-sectarian	Homeo-pathic	Eclectic	Physio-Med.	Nonde-script	Total
1880	2,673	380	188	..	..	3,241
1893	3,853	380	221	..	..	4,454
1900	4,715	413	86	..	..	5,214
1904	5,190	371	146	20	20	5,747
1910	4,113	183	114	16	14	4,440
1915	3,286	195	55	..	..	3,533
1920	2,826	97	30	..	94	3,047
1922	2,358	64	34	..	73	2,529
1925	3,856	80	38	..	..	3,974
1926	3,801	80	64	..	17	3,962
1927	3,864	90	67	..	14	4,035
1928	4,070	123	55	..	14	4,232

TABLE 6.—*Higher Degrees Other Than Medical*

Percentages of 1928 graduates obtaining baccalaureate degrees prior to, and during the medical course.

Medical School	Total Number of Graduates	Number of Arts Degrees	When Art Degrees Obtained, Percentages						
			None	Total	Year of Medical School: Fourth	Third	Second	First	Prior to Matriculation
Detroit Coll. of M. & S.	38	4	88.9	11.1	....	....	2.8	....	8.3
Temple University	49	7	85.7	14.3	....	....	....	....	14.3
Tufts College	107	17	84.1	15.9	....	....	....	0.9	15.0
N. Y. Homeo. College	61	10	83.6	16.4	....	....	....	....	16.4
Syracuse University	36	9	75.0	25.0	....	....	....	11.1	13.9
Univ. of Buffalo	59	15	74.5	25.5	....	....	....	3.5	22.0
Univ. of Georgia	36	10	72.2	27.8	....	....	....	16.7	11.1
Med. Coll. of S. Car.	41	12	70.7	29.3	....	....	....	....	29.3
Med. Coll. of Virginia	92	29	68.5	31.5	1.1	....	13.0	2.2	15.2
Eclectic Med. College	35	12	65.7	34.3	5.7	8.6	....	....	20.0
Georgetown Univ.	72	26	63.9	36.1	....	....	....	19.4	16.7
Univ. of Vermont	29	11	62.1	37.9	....	....	6.9	20.7	10.3
Baylor University	58	22	62.1	37.9	22.4	....	....	....	15.5
Univ. of Tennessee	63	24	61.9	38.1	1.6	1.6	12.7	3.2	19.0
Tulane University	100	41	59.0	41.0	....	2.0	22.0	4.0	13.0
Long Island Coll. Hosp.	102	44	56.9	43.1	....	....	1.0	13.7	28.4
Geo. Washington Univ.	63	28	55.5	44.5	....	1.6	4.8	9.5	28.6
Woman's Med. Coll., Pa.	11	5	54.5	45.5	....	....	....	....	45.5
Univ. of Maryland	80	37	53.7	46.3	....	....	7.5	3.8	35.9
Jefferson Med. Coll.	144	67	53.5	46.5	....	0.7	4.8	4.2	36.8
Univ. of Louisville	65	31	52.3	47.7	6.2	1.5	16.9	....	23.1
Univ. of Virginia	55	28	49.1	50.9	....	1.8	....	3.6	45.5
Boston University	41	21	48.8	51.2	....	....	2.4	2.4	46.4
Univ. of Michigan	104	55	47.1	52.9	1.0	1.0	15.4	10.5	25.0
Hahnemann of Phila	62	33	46.8	53.2	1.6	14.5	22.6	1.6	12.9
Albany Med. College	26	14	46.2	53.8	3.8	....	....	15.4	34.6
Washington Univ.	74	40	46.0	54.0	1.3	1.3	17.6	8.1	25.7
Marquette Univ.	61	33	45.9	54.1	45.9	....	1.6	1.6	5.0
Univ. of Texas	43	24	44.2	55.8	....	....	9.3	9.3	37.2
Univ. of Colorado	37	21	43.3	56.7	....	2.7	5.4	16.2	32.4
Emory University	61	35	42.6	57.4	1.6	1.6	9.9	19.7	24.6
Meharry Med. Coll.	46	28	39.1	60.9	....	....	....	....	60.9
Howard University	55	31	38.2	61.8	....	....	....	10.9	50.9
Northwestern Univ.	121	75	38.0	62.0	21.0	....	7.4	5.8	24.8
Coll. of Med. Evang.	37	23	37.8	62.2	2.7	....	46.0	5.4	8.1
St. Louis University	93	61	34.4	65.6	....	6.5	31.2	3.2	24.7
State Univ. of Iowa	98	65	33.7	66.3	22.4	2.0	13.3	3.1	25.5
Univ. of Cincinnati	65	44	32.3	67.7	1.5	3.1	23.1	4.6	35.4
Ohio State University	78	55	29.5	70.5	1.3	1.3	23.0	14.1	30.8
Vanderbilt University	47	34	27.7	72.3	....	....	12.8	17.0	42.5
Univ. of Arkansas	29	22	24.2	75.8	....	31.0	0.9	....	37.9
Univ. of Illinois	107	83	22.4	77.6	3.7	6.6	42.1	16.8	8.4
Creighton University	45	35	22.2	77.8	....	4.5	62.2	....	11.1
Univ. of Nebraska	65	51	21.5	78.5	....	1.5	41.6	15.4	20.0
Univ. & Bellevue Hosp.	95	76	20.0	80.0	....	....	2.1	23.2	54.7
Univ. of Wisconsin	25	20	20.0	80.0	4.0	8.0	44.0	12.0	12.0
Univ. of Pittsburgh	57	49	14.0	86.0	1.8	10.5	29.8	15.8	28.1
Univ. of Kansas	36	31	13.9	86.1	5.5	2.8	25.0	30.6	22.2
Columbia University	92	81	12.0	88.0	....	....	5.4	18.5	64.1
Loyola University	72	64	11.1	88.9	19.4	8.4	51.4	....	9.7
Yale University	51	46	9.8	90.2	....	....	2.0	29.4	58.8
Indiana University	92	84	8.7	91.3	....	4.4	56.5	14.1	16.3
Univ. of Oklahoma	41	39	4.8	95.2	4.8	....	68.3	4.8	17.3
Univ. of Pennsylvania	136	130	4.4	95.6	....	....	12.5	28.7	54.4
Harvard University	131	123	3.8	96.2	....	....	4.6	8.4	83.2
Rush Medical College	134	129	3.7	96.3	....	....	3.0	37.3	56.0
Western Reserve Univ.	58	56	3.5	96.5	....	....	1.7	44.8	50.0
Univ. of California	46	45	2.2	97.8	....	....	....	71.7	26.1
Univ. of Minnesota	112	112	...	100.0	2.7	16.1	54.4	14.3	12.5
Univ. of Oregon	47	47	...	100.0	2.1	14.9	14.9	31.9	36.2
Stanford University	38	38	...	100.0	....	....	2.6	52.6	44.8
Cornell University	64	64	...	100.0	....	....	....	34.4	65.6
Johns Hopkins Univ.	71	71	...	100.0	....	....	....	2.8	97.2
Class "C" colleges	75	25*	66.7	33.3	....	....	....	....	33.3*
Totals	4,232	2,708	1,554		136	97	598	515	1,362
Percentages			63.5	36.5	3.2	2.3	14.0	12.1	31.9

* Essential information not obtained on these colleges. Of the 25 arts degrees reported, 14 were from unapproved colleges.

Of the eighty colleges, seventy-four are nonsectarian (regular), two are homeopathic, three are eclectic, and one is nondescript. The Kansas City University of Physicians and Surgeons is intimately related to osteopathy or gives liberal advanced standing to students of osteopathic colleges. In 1926 the Middlesex College of Medicine and Surgery declared itself an eclectic college, and is also, apparently, affiliated with osteopathy.

TABLE 7.—*Medical Colleges*

Year	Non-sectarian	Homeopathic	Eclectic	Physio-Med.	Nondescript	Total
1850	44	3	4	1	..	52
1860	53	6	4	2	..	65
1870	60	8	5	2	..	75
1880	76	14	8	2	..	100
1890	106	16	9	2	..	133
1900	126	22	9	2	1	160
1910	109	12	8	1	1	131
1920	76	5	1	..	3	85
1925	74	2	1	..	3	80
1926	74	2	2	..	1	79
1927	74	2	3	..	1	80
1928	74	2	3	..	1	80

The colleges named, together with the Chicago Medical School and the College of Physicians and Surgeons of Boston, because of their serious lack of expert instructors, equipment and clinical facilities when last inspected, could not be rated higher than class C by the Council on Medical Education and Hospitals. They are also officially reported as being not recognized by the licensing boards of about forty-seven states. It matters little, therefore, whether diplomas issued by them are earned by actual attendance or whether they are purchased outright; the holders of such diplomas are now ineligible for licenses in all but a few states.

During the last twenty-five years, medical college sessions have been lengthened from an average of about twenty-eight weeks to about thirty-four weeks each, or from seven to eight months.

TABLE 8.—*Medical Colleges, Students and Graduates by States*

State	Colleges Class A	Class B	Class C	Students Men	Students Women	Graduates Men	Graduates Women	Grads. with A.B. or B.S.
Alabama	1	..	..	89	1	.....	...	.....
Arkansas	1	..	..	134	..	29	...	22
California	3	..	..	659	77	98	23	106
Colorado	1	..	..	175	12	34	3	21
Connecticut	1	..	..	190	15	50	1	46
District of Columbia	3	..	..	899	21	187	3	88
Georgia	2	..	..	340	4	96	1	45
Illinois	4	..	1	2,023	104	440	28	376
Indiana	1	..	..	406	11	89	3	84
Iowa	1	..	..	448	15	97	1	65
Kansas	1	..	..	196	12	35	1	31
Kentucky	1	..	..	278	5	64	1	31
Louisiana	1	..	..	412	14	96	4	41
Maryland	2	..	..	624	47	142	9	108
Massachusetts	3	..	2	1,358	56	295	11	164
Michigan	2	..	..	876	46	136	4	59
Minnesota	1	..	..	439	22	101	11	112
Mississippi	1	..	..	64	2	.....	...	.....
Missouri	3	..	3	918	16	177	4	101
Nebraska	2	..	..	492	8	106	4	86
New Hampshire	1	..	..	37	...	.....	...	.....
New York	8	1	..	2,318	144	496	39	313
North Carolina	2	..	..	140	1	.....	...	.....
North Dakota	1	..	..	48	1	.....	...	.....
Ohio	3	1	..	866	46	224	12	167
Oklahoma	1	..	..	183	5	39	2	39
Oregon	1	..	..	211	15	45	2	47
Pennsylvania	6	..	..	1,849	120	439	20	291
South Carolina	1	..	..	152	7	41	...	12
South Dakota	1	..	..	46	...	.....	...	.....
Tennessee	3	..	..	721	16	153	3	86
Texas	2	..	..	568	30	96	5	46
Utah	1	..	..	55	2	.....	...	.....
Vermont	1	..	..	119	11	25	4	11
Virginia	2	..	..	590	16	143	4	57
West Virginia	1	..	..	106	2	.....	...	.....
Wisconsin	2	..	..	578	25	82	4	53
Totals	72	2	6	19,616	929	4,055	207	2,708
				20,545		4,262		

New York now has nine medical colleges—the largest number—followed by Pennsylvania and Missouri with six each, and Illinois and Massachusetts with five each. Of class C colleges, Missouri has three, Massachusetts two and Illinois one. These class C colleges exist because conditions in those states do not permit of their being closed.

New York is the state having the largest number of students enrolled in its medical schools, 2,462, followed by Illinois with 2,127, Pennsylvania with 1,969, and Massachusetts with 1,414. New York leads also in the number of graduates, having reported 535, followed by Illinois with 468, Pennsylvania with 459, Massachusetts with 306, Ohio with 236 and Missouri with 181.

TABLE 9.—*Students and Graduates According to Classification*

Year	Students: Colleges Rated in Class A	%	B	%	C	%	Graduates: Colleges Rated in Class A	%	B	%	C	%
1913	11,122	65.4	4,158	24.4	1,735	10.2	2,539	63.8	1,050	26.4	392	9.8
1915	11,314	76.0	2,668	17.9	909	6.1	2,629	74.4	688	19.4	219	6.2
1920	12,320	89.2	680	4.8	798	6.0	2,690	88.4	152	5.0	205	6.6
1925	17,497	96.2	554	3.0	149	0.8	3,852	96.2	118	3.0	4	0.8
1926	17,887	95.0	582	3.0	371	2.0	3,732	94.2	130	3.3	100	2.5
1927	18,754	95.4	564	2.9	344	1.7	3,798	94.1	117	2.9	120	3.0
1928	19,794	96.3	371	1.8	380	1.9	4,091	96.0	96	2.2	75	1.8

COLLEGES, STUDENTS AND GRADUATES BY STATES

QUALIFICATIONS OF STUDENTS AND GRADUATES

Table 9 shows, for each year specified, the students and graduates grouped according to the classification of medical schools by the Council on Medical Education and Hospitals. During the last fifteen years the number of students enrolled in class A colleges has increased from 11,122 to 19,794. Both the numbers and the percentages of students enrolled in class B and class C colleges have decreased. The percentage of students in class B colleges dropped from 24.4 to 1.8, and in class C colleges from 10.2 to 1.9. Of graduates, also, the percentage in class A colleges has increased, while it has decreased in class B and class C colleges. Such reductions as there have been in the total numbers of students and graduates, therefore, have been at the expense of the lower grade colleges.

NEGRO MEDICAL STUDENTS AND GRADUATES

The numbers of negro medical students and graduates enrolled in the various medical schools during the last year are shown in table 10. Altogether, 530 negro students were enrolled, of whom 123 graduated. Totals for the four previous years also are shown.

TUITION AND OTHER FEES

In table 1, pages 474 and 475, are given the amounts charged by the various medical colleges per annum for tuition, matriculation, laboratory and graduation fees for each student. In table 11, the seventy-eight colleges have been grouped according to the amount of fees charged and according to their classification by the

Council on Medical Education and Hospitals. Ten colleges charge fees of $150 or less a year; twenty-five charge from $150 to $250; twenty-five from $250 to $350; six charge from $350 to $400; fourteen colleges this year charge between $400 and $500, and four charge between $500 and $600. The average fee per student in all colleges was $300. The ten colleges charging $150 or less are all listed among class A (acceptable) colleges by the Council on Medical Education and Hospitals and all are schools of medicine of

TABLE 10.—*Negro Medical Students*

Name of College	Session of 1927-28	
	Students	Graduates
College of Medical Evangelists	2	..
Howard University School of Medicine	233	55
Northwestern University Medical School	2	1
Rush Medical College	14	5
Chicago Medical School	20	4
Loyola University School of Medicine	1	1
Indiana University School of Medicine	6	..
Harvard University Medical School	4	..
Boston University School of Medicine	2	1
Tufts College Medical School	3	..
University of Michigan Medical School	7	1
University of Nebraska College of Medicine	1	..
Columbia University College of Phys. & Surgs	3	1
Long Island College Hospital	1	1
Syracuse University College of Medicine	1	..
Ohio State University College of Medicine	2	..
Western Reserve University School of Medicine	2	..
Temple University School of Medicine	1	1
Woman's Medical College of Pennsylvania	1	1
Meharry Medical College	211	48
Dalhousie University Faculty of Medicine	2	1
McGill University Faculty of Medicine	8	3
Queen's University Faculty of Medicine	1	1
University of Montreal Medical Faculty	2	..
Totals for 1928	530	123
Totals for 1927	526	129
Totals for 1926	574	122
Totals for 1925	543	136
Totals for 1924	471	85

state universities, the fees referred to being for residents of those states. It is customary for state university medical schools to charge higher fees for students

TABLE 11.—*College Fees—1926*

	Class A	Class B	Class C	Per Cent	Total
$50 to 100	3	..	..	3.8	3
100 to 150	7	..	..	9.0	7
150 to 200	13	..	2	19.2	15
200 to 250	8	1	1	13.0	10
250 to 300	9	..	..	11.5	9
300 to 350	15	..	1	20.5	16
350 to 400	6	..	..	7.7	6
400 to 500	7	1	..	10.2	8
500 to 600	4	..	..	5.1	4
Totals *	72	2	4	100.0	78

* Average fee per student in all colleges, $300.
* Not furnished by two class C schools.

coming from other states. Four colleges listed by the Council in class C charge fees of $150 to $350 a year, even though the diplomas from these colleges are reported as not recognized by from forty-seven to forty-nine licensing boards.[1]

COLLEGE FEES DURING EIGHTEEN YEARS

Tuition fees in medical schools have been gradually increased during the last eighteen years. From 1910 to 1915, the majority of medical schools were charging fees of $150 or less. From 1916 to 1922 the majority were charging fees above $150, while since 1920 the majority have included several medical schools charging more than $300. The percentage of medical schools charging more than $300 increased from 4.7 in 1920 to 43.5 in 1928. Now, forty (50 per cent of all colleges)

TABLE 12.—*Average Ages of 1928 Graduates*

College	No. of Graduates	Average Age
University of Arkansas School of Medicine	29	27.8
College of Medical Evangelists	37	28.1*
Stanford University School of Medicine	38	27.4*
University of California Medical School	46	27.7*
University of Colorado School of Medicine	37	26.6
Yale University School of Medicine	51	26.5
Georgetown University School of Medicine	72	26.1
George Washington University Medical School	63	27.1
Howard University School of Medicine	55	29.6
Emory University School of Medicine	61	25.7
University of Georgia Medical Department	36	25.7
Loyola University School of Medicine	72	26.8*
Northwestern University Medical School	121	27.1*
University of Chicago, Rush Medical College	134	28.3*
University of Illinois College of Medicine	107	26.1*
Indiana University School of Medicine	92	27.5
State University of Iowa College of Medicine	98	26.4
University of Kansas School of Medicine	36	27.5
University of Louisville School of Medicine	65	26.6
Tulane University of Louisiana School of Medicine	100	25.4
Johns Hopkins University School of Medicine	71	26.4
University of Maryland School of Medicine and College of Physicians and Surgeons	80	25.2
Boston University School of Medicine	41	25.4
Harvard University Medical School	131	26.5
Tufts College Medical School	107	26.2
Detroit College of Medicine and Surgery	36	27.6*
University of Michigan Medical School	104	26.1
University of Minnesota Medical School	112	26.9*
St. Louis University School of Medicine	93	27.2
Washington University School of Medicine	74	26.4
Creighton University School of Medicine	45	27.5
University of Nebraska College of Medicine	65	27.2
Albany Medical College	26	27.6
Columbia University College of Phys. and Surgs	92	27.1
Cornell University Medical College	64	26.3
Long Island College Hospital	102	25.8
New York Homeo. Medical College and Flower Hosp.	61	25.3
Syracuse University College of Medicine	36	25.3
University and Bellevue Hospital Medical College	95	25.5
University of Buffalo School of Medicine	59	25.6
Eclectic Medical College	35	28.6
Ohio State University College of Medicine	78	27.2
University of Cincinnati College of Medicine	65	27.2*
Western Reserve University School of Medicine	58	26.5
University of Oklahoma School of Medicine	41	28.6
University of Oregon Medical School	47	27.9
Hahnemann Medical College and Hospital of Philadelphia	62	25.1
Jefferson Medical College of Philadelphia	144	25.9
Temple University School of Medicine	49	25.9
University of Pennsylvania School of Medicine	136	26.4
University of Pittsburgh School of Medicine	57	26.3
Woman's Medical College of Pennsylvania	11	26.9
Medical College of the State of South Carolina	41	26.1
Meharry Medical College	46	30.0
University of Tennessee College of Medicine	63	26.8
Vanderbilt University School of Medicine	47	26.4
Baylor University College of Medicine	58	26.5
University of Texas School of Medicine	43	26.0
University of Vermont College of Medicine	29	26.2
Medical College of Virginia	92	26.8
University of Virginia Department of Medicine	55	26.5
Marquette University School of Medicine	61	25.6*
University of Wisconsin Medical School	25	27.8
Total number of graduates	4,187	26.3

* The average age of these colleges has been reduced one year since they require an intern year before degrees are granted.

are charging fees over $250 per student, and five, (6.4 per cent) are charging over $450. The average fees charged per student by all colleges in 1910 was $118; in 1915 it had increased to $145; in 1920, to $180; in 1925, to $250, and in 1928, to $300.

In 1910 several medical schools were still paying all expenses—and a few were making profits—from students' fees. At present, however, no medical college

1. J. A. M. A. **90:** 1206 (April 14) 1928, table D.

can maintain the laboratories and pay the essential instructors and properly teach modern medicine without having an income much larger than that received alone from students' fees.

As the cost of conducting medical schools has increased, there has also been an increase—and properly so—in the fees charged for tuition. A large provision has been made for scholarships and loan funds for the benefit of deserving students who are financially poor. More are needed because, with the present severity of the medical curriculum, students cannot spare the time to earn money during their attendance at the medical school.

MEDICAL STUDENTS WHO DO NOT GO ON TO GRADUATION

Since the beginning of the students' register in 1907, the biographic cards of students who dropped out of college before graduation have been kept in a separate file. From these cards a table has been prepared covering the nineteen years between 1907 and 1926 inclusive, showing the numbers of students who have dropped out of school each year during or at the end of the first, second, third or fourth classes. The results of this investigation are in table 13.

During the nineteen years, of the 83,472 individual students enrolled, 14,300 did not go on to graduation, while 69,172, or 82.9 per cent, graduated. Of the students who did not graduate, 68.1 per cent dropped out in the first year, and 21.6, 8.0 and 2.3 per cent, respectively, dropped out in the second, third and fourth years. In other words, about 90 per cent of all students who failed to graduate dropped out in the first two years of the medical course. This is as it should be.

TABLE 13.—*Medical Students Who Do Not Graduate*

Year	Medical Students Dropping Out					Number Graduating
	1st Year	2d Year	3d Year	4th Year	Total	
1907-08	350	2	1	..	353	4,741
1908-09	371	149	4	3	527	4,515
1909-10	873	291	218	1	1,383	4,440
1910-11	710	388	153	9	1,260	4,273
1911-12	704	227	129	48	1,108	4,483
1912-13	664	217	91	37	1,009	3,981
1913-14	658	197	68	33	956	3,504
1914-15	350	147	52	25	583	3,536
1915-16	345	129	55	29	558	3,518
1916-17	344	92	36	17	489	3,379
1917-18	342	77	30	19	468	2,670
1918-19	321	99	30	10	460	2,655
1919-20	362	126	34	25	547	3,047
1920-21	377	101	26	6	510	3,192
1921-22	455	119	25	19	618	2,529
1922-23	453	137	29	13	632	3,120
1923-24	572	151	53	15	791	3,562
1924-25	607	171	30	13	821	3,974
1925-26	806	270	81	10	1,227	3,962
	9,733	3,090	1,145	332	14,300	69,172
Total number of students registered.....						83,472
Per cent leaving..	68.1	21.6	8.0	2.3	100.0	82.9

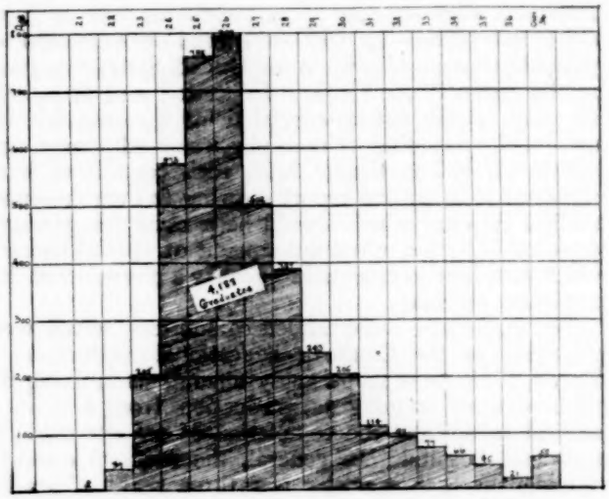
If, for scholarship or other reasons, students are not qualified for the practice of medicine they should be notified in the earlier years so their time may not be wasted by vain attempts in the higher classes, only to be dropped after they have come so much closer to graduation. This not only adds extremely to their disappointment but also prevents them from making a better use of their time in some other line of human activity.

As the foregoing figures are based on a study of the biographic cards of the students who have dropped out of medical schools, the figures are accurate and reliable.

AVERAGE AGE, GRADUATES OF 1928

In table 12 is shown the average age of the students graduating this year from each of the medical schools named. The information is given for all medical

Chart—Age of 1928 Graduates



The essential information was not furnished for 75 graduates of class C colleges.

schools, excepting those in class C. The averages followed by an asterisk (*) are reduced one year because a fifth year of internship was required before the M.D. degree was granted, and by so doing the average age for all the graduates is reduced to the basis of four years in medicine. If it is desired to include the internship in the calculation, an additional year should be added.

At first thought, the medical schools requiring a college degree for admission would be expected to show the highest average for its graduates. The highest averages, on the contrary, were 30.9 and 29.6 for Howard and Meharry medical schools, respectively, the reasons for which are not the length of the medical course but difficulties and delays in securing the essential premedical training. The next highest age average was 28.6, held by the Eclectic Medical College of Cincinnati and the University of Oklahoma School of Medicine. The average for the 4,187 graduates is 26.8, or 26.9 if the intern year is added. Although possession of a degree is required by only a few medical schools, nevertheless, as shown in table 6, 2,708, or 63.6 per cent of all graduates of 1928, obtained baccalaureate degrees in addition to the medical degrees, most of them voluntarily.

The conditions are graphically shown in the accompanying chart. It is noteworthy that the average age of the great majority of graduates is between 24 and 27 years. Averages beyond 27 years are not due to the length of the medical course but to other reasons which have delayed the student's admission to the medical school.

The averages in comparison with investigations made in previous years are given as follows:

1916	26.5
1922	26.8
1925	26.8
1928	26.8

GRADUATE MEDICAL EDUCATION IN THE UNITED STATES

Until 1922, graduate medical work in the United States was commonly obtained in about twenty-five so-called polyclinics, postgraduate schools and similar types of institutions, for the supervision of which no serious attempt had been made. There was also an irregular assortment of hospitals in which recent graduates, who had already completed internships in general hospitals, were serving as residents for one or more additional years. In 1920 a special investigation of graduate medical schools in the United States was made by the Council on Medical Education and Hospitals. For each of the fifteen special fields a committee was appointed, consisting of nine physicians who were specialists in that particular field, each committee being requested to bring in a report showing (*a*) the minimum medical training which should be a basis for graduate work and (*b*) the minimum amount of special training which was deemed essential to qualify a physician in that particular specialty.

The reports of these fifteen committees, which were presented at the Council's educational conference in March, 1921, were surprisingly unanimous in fixing the minimal basic training as graduation from a class A medical school and the completion of an internship in a general hospital. In general, the minimal essential training for each specialty was three years of graded special study, during which the student was expected to advance from a review of the basic sciences, with a gradual assumption of individual responsibility, to the latter part of the third year, when he was expected to assume a major degree of responsibility and, at the end of the third year, be ready supposedly for the independent practice of that specialty.

In the several surgical and medical specialties, the length of time finally fixed as the minimum for completion of the special training, is indicated as follows:

Field	Years Essential	Field	Years Essential
(*a*) Surgery, general	3	(*g*) Internal medicine	3
(*b*) Surgery, orthopedic	3	(*h*) Pediatrics	3
(*c*) Surgery, genito-urinary	3	(*i*) Neuropsychiatry	3
(*d*) Gynecology and obstet.	3	(*j*) Dermatology	2
(*e*) Ophthalmology	2	(*k*) Public health and hygiene	2
(*f*) Otolaryngology	2		

On the basis of the reports of the fifteen special committees and the results of a complete inspection of all graduate medical schools, which was made during the fall and winter of 1920-1921, the Council issued a schedule of "Principles Regarding Graduate Medical Schools," which represented the minimum requirements for graduate medical schools considered worthy of approval.

PRINCIPLES REGARDING GRADUATE MEDICAL SCHOOLS

The following principles were adopted by the House of Delegates in June, 1923, as a basis for the grading of graduate medical schools:

1. *Admission Requirements.*—The minimum admission requirement for those wishing to prepare themselves for the practice of a specialty should be graduation from an acceptable (class A) medical college and completion of at least one year's internship in an approved hospital, or the experience gained by at least five years spent in the active practice of medicine. In the case of reputable physicians who desire to improve themselves for general practice, lenient admission requirements are justified. Courses for *general practitioners* should be open to all physicians who have received the degree of Bachelor or Doctor of Medicine from medical colleges considered acceptable by this Council, or to reputable physicians who were licensed in certain states before graduation was required.

2. *Records.*—Records should be kept by each institution showing (*a*) the preliminary and professional entrance qualifications of every student, which should be verified by authentic or documentary evidence; (*b*) previous attendance at graduate courses and subjects taken; (*c*) the subjects for which he is enrolled; (*d*) evidence of his faithful attendance at his work; (*e*) evidence of the student's proficiency as demonstrated by research work, examinations or otherwise, and (*f*) whether an advanced degree or certificate was granted.

3. *Supervision.*—There should be careful and intelligent supervision of the entire school by a dean or other executive officer who holds, and has sufficient authority to carry out, fair ideals as determined by the present day needs of graduate medical education.

4. *Curriculum and Grading of Instruction Offered.*—The graduate school should have its various courses of instruction so graded that the student, if he desires, can obtain progressive work in a continuous course of two or three years, as may be necessary to prepare him satisfactorily for the practice of a chosen specialty. If it is found that at some previous time the student has satisfactorily completed certain portions of the work, he might be given advanced standing and thereby enabled to complete his preparation in a shorter time.

Where short operation courses are offered in any of the clinical specialties, they should be combined with review, diagnostic and clinical courses arranged either in one group for which a common fee is charged, or in a graded series so that, in effect, they would be segments of and, in total, the time and educational equivalent of the longer courses. These segments might be taken at different times, but would ultimately lead the student to the same objective. With the exception of the courses in general medicine, all short courses should fit in with a scheme, the ultimate aim of which would be a complete and satisfactory training in the specialty for which the graduate school provides instruction. Any institution offering work in any specialty, therefore, should provide (*a*) review courses in anatomy, pathology and the other basic preclinical sciences which apply to the respective specialties; (*b*) clinics in which students can have the opportunity personally to examine patients in hospital wards and outpatient departments and in which various therapeutic and operative procedures can be demonstrated; (*c*) courses of operative and laboratory technic; and (*d*)—to be assigned only when the student's previous training will warrant—assistantships in which, under the supervision of a physician who is recognized as an expert in the particular specialty, he can gradually assume responsibility in the diagnosis and therapeutic or operative treatment of the sick. Opportunity should be provided also for research work in the chosen specialty bearing on both the fundamental sciences and clinical fields. With courses so graded, no student should be admitted to any advanced short course unless, on careful investigation, he is found to possess the knowledge and skill, such as are obtainable in the other prerequisite courses.

5. *Teachers.*—The graduate medical school should be supplied with a corps of teachers well trained in and responsible for the work in all subjects in which opportunities for study are announced. This should include teachers for essential review or advanced work in the preclinical sciences, as well as those who have in charge work in clinical subjects. The teaching staff should be made up of graduates or of teachers in Class A medical colleges or other high grade educational institutions.

TABLE I.—*Years of Practice of Graduate Students*

GRADUATE SCHOOLS	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	No Inf.	Totals 1926-27
California:												
Stanford University School of Medicine	8	3	3	5	..	..	1	..	..	..	..	20
University of California Graduate Division	5	2	8	13	6	..	2	1	..	..	..	37
Colorado:												
Colorado School of Tuberculosis	..	2	1	2	3	..	..	..	..	..	1	9
University of Colorado Graduate School	3	1	..	..	..	..	..	..	..	..	..	4
Connecticut:												
New Haven School of Physiotherapy	4	2	4	2	2	1	1	..	..	..	..	16
Yale University Graduate School	7	1	..	2	..	..	..	..	..	..	4	14
District of Columbia:												
Howard University School of Medicine	1	2	..	1	..	..	..	..	..	..	..	4
Georgia:												
University of Georgia Medical Department	..	..	..	..	1	1	..	..	..	..	..	2
Illinois:												
Children's Memorial Hospital	6	6	5	10	3	6	2	..	..	..	2	40
University of Chicago, Rush Medical College	9	7	7	1	1	1	..	..	..	..	..	26
University of Illinois College of Medicine	12	2	..	1	..	..	..	..	..	..	..	15
Indiana:												
Indiana University School of Medicine	2	1	1	3	5	3	3	..	..	..	..	18
Iowa:												
State University of Iowa College of Medicine	9	3	..	..	..	..	..	..	..	..	..	12
Louisiana:												
Tulane University Graduate School of Medicine	13	13	27	44	34	13	* 8	3	1	..	3	159
Maryland:												
Johns Hopkins University School of Hygiene and Public Health	12	27	13	5	8	1	..	..	..	..	..	66
Massachusetts:												
Harvard Medical School	30	53	26	39	31	18	15	1	2	..	4	222
Harvard School of Public Health	14	8	6	4	1	2	..	..	..	..	..	35
Massachusetts Institute of Technology	..	1	..	..	..	..	..	..	..	..	..	1
Michigan:												
Detroit College of Medicine and Surgery	1	..	..	..	..	..	..	..	..	..	..	1
Detroit Post-Graduate School of Medicine	3	5	3	1	2	2	2	..	..	..	..	18
University of Michigan Medical School	5	3	1	1	2	3	1	..	..	..	..	16
University of Michigan Graduate School	5	..	..	..	1	..	..	..	..	..	..	6
Minnesota:												
Mayo Foundation for Medical Education and Research	180	101	15	2	..	..	..	..	..	..	..	298
University of Minnesota Graduate School of Medicine †	21	15	4	1	..	..	..	..	..	..	6	47
Missouri:												
Washington University School of Medicine	16	12	25	18	22	12	1	1	..	..	..	107
New Jersey:												
Physiatric Institute	1	2	2	..	2	..	1	..	..	..	..	8
New York:												
Albany Medical College	1	3	3	2	2	1	..	..	1	..	..	13
Columbia University College of Physicians and Surgeons	11	28	29	36	23	9	4	3	1	..	2	146
Cornell University Medical College	5	19	5	2	2	..	1	..	..	..	..	34
New York Eye and Ear Infirmary (School of Ophth. & Otol.)*	8	6	4	3	3	..	1	..	..	..	9	34
New York Post-Graduate Medical School and Hospital	80	118	83	75	51	35	13	6	2	..	3	466
New York Skin and Cancer Hospital	1	1	3	1	..	1	..	..	..	..	..	7
Trudeau School of Tuberculosis	7	8	1	6	1	..	1	..	..	..	3	27
University and Bellevue Hospital Medical College	15	11	6	7	2	2	1	..	1	..	1	46
University of Buffalo School of Medicine	1	1	4	3	5	2	1	1	..	1	1	20
Ohio:												
Ohio State University Graduate School	1	..	..	..	..	..	..	..	..	..	..	1
University of Cincinnati Graduate School	6	1	..	..	..	..	..	..	..	..	..	7
Pennsylvania:												
Pennsylvania Hospital	3	2	1	..	..	..	..	..	..	..	..	6
University of Pennsylvania Graduate School of Medicine	58	69	42	36	14	9	2	1	..	..	..	231
Texas:												
Baylor University College of Medicine	2	1	3	10	5	7	4	5	1	..	2	40
University of Texas School of Medicine	3	6	2	2	6	4	2	..	..	..	..	25
Porto Rico:												
University of Porto Rico School of Tropical Medicine	1	11	6	1	2	..	..	..	..	..	1	22
Totals—1926-1927	570	557	353	339	243	153	67	22	9	1	42	2,336
Totals—1922-1923	443	581	475	484	248	152	62	23	14	6	427	2,915

* The statistics are for the calendar year 1927.
† Twelve students not listed but included with Mayo Foundation.

The faculty should be organized under the various teaching departments in which work is offered, with a competent teacher at the head of each department.

6. *Laboratories.*—The school should possess well equipped laboratories to provide proper review or advanced work in both laboratory and clinical subjects essential for the specialty or specialties in which opportunities are offered. There should also be an adequate supply of special apparatus, such as stereopticons, balopticons, photomicrographic outfits and roentgen-ray equipment.

7. *Library and Museum Facilities.*—The graduate school should have a medical library which should include an ample supply of modern text and reference books, files of bound medical periodicals, and the essential indexes. It should also receive regularly thirty or more standard medical periodicals, the latest numbers of which should be on tables or in racks where they are easily accessible to the graduate students. The school should be supplied also with adequate museum facilities, including anatomic and pathologic specimens and essential cases for them.

8. *Hospitals and Dispensaries.*—The graduate medical school should have a teaching hospital with a daily average of 200 or more patients, and an outpatient clinic

with an average of 100 or more patients each day; or, if teaching is limited to a single specialty, a hospital of not less than twenty-five patients daily, and an outpatient clinic of at least fifty patients daily. In brief, it should have sufficient clinical material to enable it to provide satisfactory clinical study in the specialty or specialties for which opportunities are offered. In connection with the courses for general practitioners, ample clinical material should be available so that the student may be given the opportunity personally to examine patients in hospital wards and in the outpatient department, and to make the essential laboratory examinations.

9. *Annual Announcements.*—The graduate school should publish annually announcements, bulletins or catalogues giving detailed information in regard to its teachers, laboratories, dispensaries and hospitals; outlines of the various opportunities for study offered in both fundamental and clinical branches; a complete list of the students enrolled during the last preceding year, showing their medical schools and years of graduation, the subjects for which they registered and the time spent in each, and a list of those to whom advanced degrees or diploma-like certificates were granted.

10. *Advanced Degrees, Diplomas, Certificates.*—No advanced degree or diploma-like certificate should be granted to any one who is not known to be proficient in the specialty pursued; nor to any one, under any circumstances, who has not completed at least one academic year in full-time study of a single special subject in the institution granting the certificate; and unless scholarship records show that, throughout the period, he has faithfully attended to his work, and unless reasonable tests show that he has diligently and satisfactorily completed the work for which he was registered.

TABLE II.—*Number of Graduate*

GRADUATE SCHOOLS	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota
California:																						
Stanford University School of Medicine	..	..	..	12	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..
University of California Graduate Division	..	2	..	21	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..
Colorado:																						
Colorado School of Tuberculosis	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
University of Colorado School of Medicine	..	..	..	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Connecticut:																						
New Haven School of Physiotherapy	..	..	..	1	..	6	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Yale University Graduate School	..	..	..	..	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
District of Columbia:																						
Howard University School of Medicine	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..
Georgia:																						
University of Georgia Medical Department	..	..	..	..	..	..	.	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..
Illinois:																						
Children's Memorial Hospital	..	1	..	..	..	2	..	..	1	..	..	6	5	1	..	..	..	..	..	..	3	..
University of Chicago, Rush Medical College	..	..	..	3	..	..	..	..	..	..	..	6	..	3	..	1	..	..	..	1	1	2
University of Illinois College of Medicine	..	..	..	..	..	..	..	..	..	..	..	15	..	..	..	..	..	..	..	..	..	..
Indiana:																						
Indiana University School of Medicine	..	..	..	..	..	..	..	..	..	..	..	1	17	..	..	..	..	..	..	..	..	..
Iowa:																						
State University of Iowa College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	10	..	..	..	..	..	..	1	..
Louisiana:																						
Tulane University Graduate School of Med	8	..	11	2	..	..	..	..	3	8	..	5	..	..	4	1	21	..	..	1	4	3
Maryland:																						
Johns Hopkins Univ. Sch. of Hyg. & Pub. H.	1	..	..	..	..	..	..	2	..	..	..	1	..	..	1	..	2	..	7	1	..	..
Massachusetts:																						
Harvard Medical School	3	..	1	5	1	6	..	3	1	4	1	1	3	1	3	2	..	6	..	103	3	3
Harvard School of Public Health	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	4	..	..
Massachusetts Institute of Technology	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Michigan:																						
Detroit College of Medicine and Surgery	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
Detroit Post-Graduate School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	12	..
University of Michigan Medical School	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	10	..
University of Michigan Graduate School	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..
Minnesota:																						
Mayo Foundation for Med. Educ. & Research	5	..	1	11	2	1	..	8	..	8	..	16	4	12	4	3	1	2	1	4	12	55
University of Minnesota Grad. Sch. of Med.†	..	..	1	1	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	1	2	28
Missouri:																						
Washington University School of Medicine	3	..	4	4	2	..	..	..	..	2	..	12	3	6	3	2	..	..	..	..	3	1
New Jersey:																						
Physiatric Institute	..	..	..	1	..	..	..	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..
New York:																						
Albany Medical College	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Columbia University College of Phys. & Surg.	2	1	..	4	..	7	..	1	..	..	..	1	..	..	..	2	..	..	..	2	..	1
Cornell University Medical College	..	..	..	1	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
New York Eye & Ear Inf. (Sch. Oph. & Otol.)*	..	..	..	1	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..
New York Post-Graduate Med. Sch. and Hosp.	5	1	5	13	2	6	1	13	11	6	1	5	4	2	7	5	1	5	2	12	5	1
New York Skin and Cancer Hospital	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Trudeau School of Tuberculosis	..	..	..	..	1	..	..	1	1	..	..	..	1	..	..	..	2	..	1	..	..	..
University and Bellevue Hosp. Med. College	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	3	..	..
University of Buffalo School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ohio:																						
Ohio State University Graduate School	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
University of Cincinnati Graduate School	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pennsylvania:																						
Pennsylvania Hospital	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
University of Pennsylvania Grad. Sch. of Med.	..	1	..	10	1	3	1	4	4	..	1	6	4	..	3	1	2	1	3	7	13	2
Texas:																						
Baylor University College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
University of Texas School of Medicine	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Porto Rico:																						
University of Porto Rico School of Trop. Med.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Total	28	7	23	92	15	35	2	35	22	34	7	78	43	37	29	18	31	14	14	144	74	97

* The statistics given are for the calendar year 1927.

† Twelve students not listed but included with Mayo Foundation.

FIRST STATISTICS PUBLISHED

Complete reports were obtained of the physician-students enrolled in the twenty-five various polyclinics and postgraduate schools during the calendar year 1922. The data obtained from these reports were published in the proceedings of the Council's Annual Conference on Medical Education in March, 1923.

The total number of physician-students enrolled during 1922 was 2,915. In addition to this number, there were 641 physicians serving as advanced interns (more properly referred to as "residents"), in 285 hospitals, of which their worthiness for approval had not been considered, making a total of 3,556 graduate students.

Since 1922, with the supervision established over graduate medical schools, instead of only twenty-five unstandardized institutions, including some which were found unworthy of approval, the list has been increased to forty-one, all of which are approved. The enrolment in these institutions during 1926-1927 showed a total of 2,336 physicians, or 579 less than were enrolled in graduate medical schools in 1922, since enrolments in unapproved schools were not considered.

With the supervision of the 285 hospitals in which residents were enrolled, the number was considerably reduced through the elimination of several deemed unworthy of approval. Others were added, however, so that in 1927 the total number of hospitals approved for residencies was 292, seven more than in 1922, but all of which were approved. In 1927, the number of physicians enrolled as residents in these hospitals numbered 1,136. The total number of graduate students in 1927, in approved graduate medical schools and hospitals, therefore, was 3,472, or eighty-four less than in 1922.

(Continued on page 490)

Students Coming From Each State

Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U. S. Possessions (and Navy)	Canada	Foreign	Not Stated	Total
..	..	1	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	1	..	23
..	..	..	..	1	..	..	1	..	..	..	..	..	3	..	..	..	..	..	..	2	..	..	4	..	..	..	..	..	..	..	37
..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	...	..	..	..	1	..	..	..	..	1	..	9
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
..	..	..	..	..	..	1	..	3	..	..	1	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	16
..	..	..	..	..	..	..	..	3	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	14
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	4
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
..	1	..	2	..	..	..	1	..	..	..	4	1	..	1	..	..	..	1	1	..	..	..	2	2	2	..	..	1	..	2	40
..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	1	1	..	..	1	..	2	..	..	2	..	..	26
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	15
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	18
..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12
15	3	1	2	..	..	..	4	..	6	1	1	10	1	1	1	..	1	3	33	..	..	..	..	1	..	..	..	..	4	..	150
..	..	..	..	..	..	1	..	2	1	..	..	2	..	1	..	..	..	..	..	..	..	2	1	..	..	..	1	1	39	..	66
..	2	..	1	..	8	1	..	9	..	..	12	1	1	6	14	..	2	..	3	..	1	6	..	3	..	..	2	3	7	..	232
..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	28	..	35
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	18
..	..	..	..	..	..	..	..	1	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	16
..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6
1	5	2	8	..	..	..	..	7	5	4	10	..	4	20	..	5	4	6	6	1	..	5	5	..	11	1	2	22	14	..	208
..	..	..	1	..	..	..	..	1	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	5	47
3	6	..	3	..	..	..	1	4	8	1	4	6	..	2	..	1	..	3	9	..	..	..	2	1	3	1	..	3	1	..	107
..	..	..	..	..	..	1	..	..	..	..	1	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	3
..	..	..	..	..	..	..	..	13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13
..	..	..	..	..	..	26	..	81	1	..	3	1	1	4	..	..	..	1	1	..	..	..	1	..	1	..	..	..	4	..	146
..	1	..	..	..	..	2	..	19	..	..	..	..	..	1	..	..	..	..	2	..	..	..	1	1	..	..	..	..	4	..	34
..	..	1	..	..	..	2	..	6	..	..	..	..	1	1	1	1	1	..	1	..	..	2	..	2	1	..	..	2	..	8	34
4	3	1	5	..	2	46	..	126	12	1	19	6	3	21	1	6	3	7	14	..	1	9	2	7	2	1	12	23	16	..	466
..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	7
..	1	..	..	..	..	6	..	8	..	..	2	..	1	5	1	2	..	1	..	..	..	..	1	..	..	..	..	2	3	..	27
..	..	..	..	..	..	..	..	19	..	..	5	..	1	7	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2	..	46
..	..	..	..	..	..	..	..	8	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	20
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1
..	..	..	..	..	..	..	..	..	..	..	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7
..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6
1	2	..	3	..	1	7	1	14	3	..	13	..	2	74	2	1	..	1	8	1	..	5	2	2	3	..	2	8	8	..	231
..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	29	..	..	..	..	..	..	..	..	..	..	..	40
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	24	..	..	..	..	..	..	..	..	..	..	..	25
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20	..	..	1	22
24	24	7	25	1	12	93	8	330	36	7	86	29	23	155	21	16	11	24	144	6	2	30	24	25	25	4	39	75	135	16	2,336

TABLE III.—*Percentage of Physicians Taking Postgraduate Courses*

State	Total Number of Physicians		Physicians Taking Graduate Courses		Percentage of Physicians Taking Graduate Courses	
	1922	1927	1922	1927	1922	1927
Alabama	2,313	2,254	45	28	1.9	1.2
Arizona	372	393	7	7	1.9	1.8
Arkansas	2,303	2,103	26	23	1.1	1.1
California	7,549	8,854	112	92	1.5	1.4
Colorado	1,882	1,805	34	15	1.8	0.8
Connecticut	1,727	1,966	47	35	2.7	1.8
Delaware	265	251	5	2	1.9	0.8
District of Columbia	1,924	1,848	24	35	1.3	1.9
Florida	1,348	1,787	44	22	3.3	1.2
Georgia	3,274	2,935	64	34	1.9	1.1
Idaho	452	401	12	7	2.6	1.7
Illinois	10,716	10,893	201	78	1.9	0.7
Indiana	4,353	4,164	78	43	1.8	1.0
Iowa	3,490	3,302	66	37	1.9	1.1
Kansas	2,492	2,296	64	29	2.6	1.2
Kentucky	3,155	2,971	46	18	1.5	0.6
Louisiana	2,058	2,039	47	31	2.3	1.5
Maine	1,067	1,029	24	14	2.2	1.3
Maryland	2,349	2,387	42	14	1.8	0.6
Massachusetts	5,977	6,242	191	144	3.2	2.3
Michigan	4,653	5,145	91	74	1.9	1.4
Minnesota	2,774	2,982	144	97	5.2	3.2
Mississippi	1,792	1,680	26	24	1.5	1.4
Missouri	5,827	5,713	75	24	1.3	0.4
Montana	568	507	15	7	2.6	1.3
Nebraska	1,913	1,846	32	25	1.6	1.3
Nevada	140	129	2	1	1.4	0.8
New Hampshire	615	584	19	12	3.1	2.0
New Jersey	3,362	3,755	70	93	2.1	2.4
New Mexico	399	357	13	8	3.3	2.2
New York	16,857	18,634	272	330	1.6	1.8
North Carolina	2,226	2,328	41	36	1.8	1.5
North Dakota	517	497	23	7	4.4	1.4
Ohio	8,086	8,287	123	86	1.5	1.0
Oklahoma	2,600	2,458	47	29	1.8	1.1
Oregon	1,158	1,225	29	23	2.5	1.8
Pennsylvania	11,241	11,405	172	155	1.5	1.3
Rhode Island	754	779	34	21	4.5	2.7
South Carolina	1,368	1,309	28	16	2.0	1.2
South Dakota	630	603	29	11	4.6	1.8
Tennessee	3,228	3,016	43	24	1.3	0.8
Texas	6,094	6,123	121	144	2.0	2.3
Utah	497	516	21	6	4.2	1.2
Vermont	536	529	6	2	1.1	0.4
Virginia	2,503	2,506	54	30	2.2	1.2
Washington	1,756	1,807	26	24	1.5	1.3
West Virginia	1,751	1,747	39	25	2.2	1.4
Wisconsin	2,772	2,896	80	25	2.9	0.9
Wyoming	263	238	6	4	2.3	1.7
All states	145,966	149,521	2,860	2,071	1.9	1.3
U. S. Possessions			25	39		
Canada			98	75		
Foreign			84	135		
Unknown			1	16		
Total			3,068	2,336		

TABLE IV.—*Population of Residence Cities of Graduate Students*

GRADUATE SCHOOLS	0 to 2,500	2,500 to 5,000	5,000 to 10,000	10,000 to 20,000	20,000 to 50,000	50,000 to 100,000	100,000 to 500,000	Above 500,000	From Foreign Countries	Not Stated	Total
California:											
Stanford University School of Medicine	7	1	..	..	2	..	2	7	1	..	20
University of California Graduate Division	10	5	4	2	2	..	6	8	..	..	37
Colorado:											
Colorado School of Tuberculosis	2	..	..	2	2	..	1	1	1	..	9
University of Colorado School of Medicine	..	..	..	..	..	..	4	..	..	..	4
Connecticut:											
New Haven School of Physiotherapy	1	..	..	3	4	..	4	4	..	..	16
Yale University Graduate School	..	..	..	2	1	1	2	4	4	..	14
District of Columbia:											
Howard University School of Medicine	..	..	1	1	..	2	..	..	..	..	4
Georgia:											
University of Georgia Medical Department	1	..	..	1	..	..	..	..	..	..	2
Illinois:											
Children's Memorial Hospital	9	3	6	4	6	3	5	2	..	2	40
University of Chicago, Rush Medical College	6	1	1	1	4	1	6	6	..	..	26
University of Illinois College of Medicine	..	..	..	..	1	..	..	14	..	..	15
Indiana:											
Indiana University School of Medicine	6	..	..	..	4	..	7	1	..	..	18
Iowa:											
State University of Iowa College of Medicine	2	..	..	8	..	..	..	2	..	..	12
Louisiana:											
Tulane University Graduate School of Medicine	60	23	13	17	12	11	16	3	4	..	159
Maryland:											
Johns Hopkins University School of Hyg. and Pub. Health	6	1	..	1	2	1	3	12	39	1	66
Massachusetts:											
Harvard Medical School	24	6	17	17	33	29	69	29	7	1	232
Harvard School of Public Health	..	..	..	2	1	..	1	3	28	..	35
Massachusetts Institute of Technology	..	..	..	..	..	..	..	1	..	..	1
Michigan:											
Detroit College of Medicine and Surgery	..	..	..	1	..	..	..	..	..	..	1
Detroit Post-Graduate School of Medicine	1	1	..	1	..	1	3	10	1	..	18
University of Michigan Medical School	2	1	1	1	2	..	7	2	..	..	16
University of Michigan Graduate School	..	1	..	2	2	..	1	..	..	..	6
Minnesota:											
Mayo Foundation for Medical Education and Research	50	18	21	40	30	9	62	54	14	..	298
University of Minnesota Graduate School of Medicine †	2	..	2	..	..	2	29	6	1	5	47
Missouri:											
Washington University School of Medicine	20	14	9	13	21	4	15	10	1	..	107
New Jersey:											
Physiatric Institute	..	1	..	..	1	..	1	5	..	..	8
New York:											
Albany Medical College	4	2	..	..	1	3	3	..	..	..	13
Columbia University College of Physicians and Surgeons	6	4	3	4	5	11	24	85	4	..	146
Cornell University Medical College	4	4	2	2	..	5	4	13	..	..	34
New York Eye and Ear Infirmary (Sch. of Ophth. & Otol.)*	3	3	3	..	1	6	4	6	..	8	34
New York Post-Graduate Medical School and Hospital	60	41	39	39	41	41	69	120	16	..	466
New York Skin and Cancer Hospital	1	..	..	..	1	1	1	2	1	..	7
Trudeau School of Tuberculosis	7	..	2	1	6	1	2	5	3	..	27
University and Bellevue Hospital Medical College	..	..	1	1	4	3	12	23	2	..	46
University of Buffalo School of Medicine	10	3	..	3	1	2	1	..	..	..	20
Ohio:											
Ohio State University Graduate School	..	..	..	..	1	..	..	..	..	..	1
University of Cincinnati Graduate School	..	..	..	..	..	..	6	1	..	..	7
Pennsylvania:											
Pennsylvania Hospital	1	..	..	1	..	..	..	4	..	..	6
University of Pennsylvania Graduate School of Medicine	16	9	16	22	26	25	40	69	8	..	231
Texas:											
Baylor University College of Medicine	28	4	2	3	2	..	1	..	..	..	40
University of Texas School of Medicine	17	1	1	..	1	..	4	1	..	..	25
Porto Rico:											
University of Porto Rico School of Tropical Medicine	..	2	4	..	2	13	..	..	..	1	22
Totals for 1926-1927	356	149	148	195	222	175	415	513	135	18	2,336
Totals for 1922-1923	631	225	226	253	271	229	421	431	79	..	3,068

* The statistics given are for the calendar year 1927.
† Twelve students not listed but included with Mayo Foundation.

TABLE V.—*Subjects Selected by Graduate Students*

GRADUATE SCHOOLS	General Medicine	Gastro-Ent.	Proctology	Cardiol. & Circul.	Neurol. & Psych.	Endocrinol. & Metab.	Tuberculosis	Public Health	Pediatrics	Dermatol. & Syphil. (Neoplasms)	(Phys. & Lab.) Diagnosis	Medicine & Surg. (General Course)	Surgery (Gen. & Operative)	Orthopedics	Anesthesia (Gen.-Regional)	Eye, Ear, Nose, Throat	Bronchoscopy	Obst. & Gyn.	Obs., Gyn. & Ped.	Urology (G. U.)	Radiology	Physical Therapy	Bacteriology	Anatomy	Phys. & Biochem.	Pharmacology	Pathology	Unclassified	Total
California:																												
Stanford University School of Medicine	4	..	..	..	..	..	..	..	3	1	..	..	3	..	..	6	..	1	..	1	..	..	..	..	..	..	1	..	20
University of California Graduate Division	7	5	..	3	..	..	..	..	1	..	..	1	9	..	..	2	..	1	2	4	2	..	..	..	..	..	..	..	37
Colorado:																												
Colorado School of Tuberculosis	..	..	..	..	..	..	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9
University of Colorado School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..	4
Connecticut:																												
New Haven School of Physiotherapy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	16	..	..	..	..	..	16
Yale University Graduate School	5	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	..	..	2	14
District of Columbia:																												
Howard University School of Medicine	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	4
Georgia:																												
University of Georgia Medical Department	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Illinois:																												
Children's Memorial Hospital	..	..	..	..	..	..	..	..	40	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	40
University of Chicago, Rush Medical College	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	25	..	..	..	..	..	..	..	..	..	..	..	..	26
University of Illinois College of Medicine	3	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	4	..	..	..	..	..	..	2	2	2	..	15
Indiana:																												
Indiana University School of Medicine	..	..	..	..	..	..	1	..	..	..	9	..	..	..	..	4	..	..	..	..	..	3	..	..	..	1	..	..	18
Iowa:																												
State University of Iowa College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	..	1	..	..	..	..	..	7	..	..	1	..	12
Louisiana:																												
Tulane University Graduate School of Medicine	46	4	..	..	1	..	..	..	8	3	2	15	15	..	..	44	..	8	2	8	3	..	..	..	..	..	..	..	159
Maryland:																												
Johns Hopkins University School of Hyg. and Pub. Health	..	..	..	..	..	..	..	58	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	..	..	..	..	..	66
Massachusetts:																												
Harvard Medical School	4	..	2	14	3	..	..	..	22	7	81	1	2	25	..	14	..	12	..	4	18	10	..	7	1	..	2	3	232
Harvard School of Public Health	..	..	..	..	..	..	..	30	..	..	..	..	..	..	..	..	..	..	..	..	1	..	5	..	..	..	..	..	35
Massachusetts Institute of Technology	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Michigan:																												
Detroit College of Medicine and Surgery	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Detroit Post-Graduate School of Medicine	2	..	4	..	..	..	..	..	..	..	1	..	1	..	..	2	..	4	..	4	..	..	..	..	..	..	..	..	18
University of Michigan Medical School	..	..	..	3	..	4	..	..	..	1	..	..	..	..	2	..	..	..	..	..	1	..	..	1	..	..	..	..	16
University of Michigan Graduate School	..	..	..	..	..	1	..	1	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	6
Minnesota:																												
Mayo Foundation for Medical Education and Research	82	..	2	..	7	..	..	..	12	10	..	..	128	8	..	22	..	4	..	10	5	..	..	..	1	..	7	..	298
University of Minnesota Graduate School of Medicine †	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	47	47
Missouri:																												
Washington University School of Medicine	..	..	..	27	..	..	..	..	66	1	..	..	..	..	..	1	..	9	1	2	..	..	..	..	..	..	..	..	107
New Jersey:																												
Physiatric Institute	..	..	..	..	..	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8
New York:																												
Albany Medical College	..	..	..	..	..	..	..	13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13
Columbia University College of Physicians and Surgeons	49	12	..	..	7	..	..	1	26	17	..	..	3	..	..	10	..	4	..	..	..	11	..	..	..	..	6	..	146
Cornell University Medical College	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20	..	..	..	1	..	..	..	10	..	..	3	..	34
New York Eye and Ear Infirmary (Sch. of Ophth. & Otol.)*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	34	..	..	..	..	..	..	..	..	..	..	..	..	34
New York Post-Graduate Medical School and Hospital	27	..	..	..	..	..	..	..	40	3	19	50	58	10	1	12	1	71	7	56	30	..	..	..	..	..	..	1	466
New York Skin and Cancer Hospital	..	..	..	..	..	..	..	..	..	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7
Trudeau School of Tuberculosis	..	..	..	..	..	..	27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	27
University and Bellevue Hospital Medical College	..	..	..	..	..	..	..	..	..	10	..	..	9	..	27	..	..	..	..	..	..	..	..	..	..	..	..	..	46
University of Buffalo School of Medicine	..	..	..	..	..	..	..	..	..	..	..	20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20
Ohio:																												
Ohio State University Graduate School	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
University of Cincinnati Graduate School	..	..	..	..	..	..	..	..	5	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7
Pennsylvania:																												
Pennsylvania Hospital	..	..	..	..	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6
University of Pennsylvania Graduate School of Medicine	20	6	..	9	14	..	2	..	6	12	..	..	44	3	..	49	36	12	..	10	6	..	..	1	..	1	..	..	231
Texas:																													
Baylor University College of Medicine	..	..	..	..	..	..	..	..	..	..	..	40	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	40
University of Texas School of Medicine	25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	25
Porto Rico:																													
University of Porto Rico School of Tropical Medicine	..	..	..	..	..	..	..	17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	22
Totals for 1926-1927	275	27	8	56	38	13	39	126	231	73	112	128	276	47	30	328	37	134	12	100	65	40	14	30	9	3	32	53	2,336
					326											964								88				

* The statistics given are for the calendar year 1927.

† Twelve students not listed but included with Mayo Foundation.

TABLE VI.—*Schools of Graduation of Graduate Students Enrolled in 1927*

MEDICAL SCHOOLS	Classification of Med. Coll.	Stanford Univ. School of Medicine	University of California Grad. Div.	Colorado School of Tuberculosis	University of Colorado Grad. Sch.	New Haven Sch. of Physiotherapy	Yale University Graduate School	Howard University School of Med.	University of Georgia Med. Dept.	Children's Memorial Hospital	Univ. of Chicago, Rush Med. Coll.	University of Illinois Coll. of Med.	Indiana University School of Med.	State Univ. of Iowa Coll. of Med.	Tulane Univ. Grad. School of Med.	Johns Hopkins Univ. Sch. of Hyg.	Harvard Medical School	Harvard School of Public Health	Massachusetts Inst. of Technology	Detroit College of Med. and Surg.	Detroit Post-Grad. School of Med.	University of Michigan Med. School	University of Michigan Grad. Sch.	Mayo Foundation	Univ. of Minnesota Grad. Sch. of Medicine †	Washington Univ. School of Med.	Physiatric Institute	Albany Medical College	Columbia Univ. Coll. of P. & S.	Cornell University Medical College	New York Eye and Ear Infirmary *	New York P.-Grad. Med. Sch. & Hos.	New York Skin and Cancer Hosp.	Trudeau School of Tuberculosis	Univ. and Bellevue Hosp. Med. Coll.	University of Buffalo Sch. of Med.	Ohio State University Coll. of Med.	Univ. of Cincinnati College of Med.	Pennsylvania Hospital	Univ. of Pa. Grad. Sch. of Med.	Baylor University College of Med.	University of Texas School of Med.	Univ. of Porto Rico Sch. Trop. Med.	Totals
ALABAMA																																										
University of Alabama School of Medicine	A	..	..	..	..	..	..	..	..	..	..	..	..	..	6	..	3	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1	..	..	..	..	..	..	..	..	..	12
ARKANSAS																																										
University of Arkansas School of Medicine	A	..	..	..	..	..	..	..	..	..	..	..	..	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	5
CALIFORNIA																																									
College of Medical Evangelists	A	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	3	..	..	..	11
Stanford University School of Medicine	A	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6
University of California Medical School	A	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	2	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	7
COLORADO																																									
University of Colorado School of Medicine	A	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	1	..	4	..	..	..	..	2	..	..	..	12
CONNECTICUT																																									
Yale University School of Medicine	A	..	1	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2	1	..	3	1	..	..	..	1	..	..	..	13
DISTRICT OF COLUMBIA																																									
Georgetown University School of Medicine	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	..	..	..	..	..	..	..	3	1	..	..	..	2	..	..	5	..	..	..	..	2	..	..	..	21
George Washington University Medical School	A	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	4	..	..	1	..	..	..	..	5	..	1	..	..	2	..	..	1	16
Howard University School of Medicine	A	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2
GEORGIA																																									
Emory University School of Medicine	A	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	2	..	..	..	..	..	..	..	4	..	2	..	..	..	1	..	5	..	..	..	..	..	1	..	..	18
University of Georgia Medical Department	A	..	..	..	..	..	..	..	1	1	..	..	..	..	4	..	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	..	..	..	..	..	..	9
ILLINOIS																																									
Chicago Medical School	C	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Loyola University School of Medicine	A	..	..	1	..	..	..	..	..	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	1	5	..	..	1	..	..	..	..	1	14
Northwestern University Medical School	A	..	1	1	..	..	..	..	..	4	..	..	..	1	4	..	..	..	..	..	..	..	..	..	9	1	4	..	..	..	..	1	5	..	1	..	1	6	..	..	..	39
Rush Medical College (University of Chicago)	A	1	2	..	..	..	1	..	..	..	11	1	..	..	1	4	5	..	..	..	..	..	..	..	20	1	5	..	..	..	..	1	8	1	1	..	1	..	..	..	1	70
University of Illinois College of Medicine	A	..	..	..	..	..	..	..	..	..	..	10	2	..	4	..	..	..	..	..	1	..	..	..	4	..	3	..	..	..	..	..	3	..	..	..	..	5	..	..	..	32
INDIANA																																									
Indiana University School of Medicine	A	..	1	..	..	..	..	..	..	1	..	..	6	..	..	..	2	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	1	..	1	1	..	..	2	7	..	..	25
IOWA																																									
State University of Iowa College of Medicine	A	..	1	..	..	..	..	..	..	1	..	..	..	6	1	..	..	..	..	..	..	..	..	..	11	1	1	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	21
KANSAS																																									
University of Kansas School of Medicine	A	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	2	..	1	..	..	..	..	1	2	..	1	..	..	..	1	2	..	..	12
KENTUCKY																																									
University of Louisville School of Medicine	A	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	2	..	..	..	..	1	..	1	..	..	5	..	..	1	1	..	6	..	..	..	..	..	3	1	1	..	24
LOUISIANA																																									
Tulane University of Louisiana School of Medicine	A	..	..	..	..	..	..	..	..	..	..	..	..	..	18	1	..	..	..	..	..	..	..	..	2	..	3	..	..	1	..	..	8	1	1	..	..	..	1	4	3	2	45
MARYLAND																																									
Johns Hopkins University School of Medicine	A	1	..	..	..	..	3	..	..	..	..	..	..	..	..	5	2	..	..	..	1	..	..	9	1	..	..	..	..	..	..	4	..	..	..	..	2	..	..	..	29
University of Maryland School of Medicine	A	..	1	..	..	..	..	..	..	..	..	..	..	..	3	4	4	..	..	..	..	..	..	..	..	..	1	..	1	1	1	2	12	..	1	2	..	..	5	..	..	4	42
MASSACHUSETTS																																									
Boston University School of Medicine	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..	1	..	..	1	..	..	2	20
College of Physicians and Surgeons, Boston	C	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1
Harvard University Medical School	A	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	19	1	..	..	..	..	1	..	1	..	1	3	..	..	1	1	5	..	..	..	..	2	..	..	6	..	1	..	43
Tufts College Medical School	A	..	..	..	..	..	1	..	..	..	1	..	..	..	..	1	22	1	1	..	..	..	..	..	..	..	..	..	..	1	1	7	..	..	1	..	..	..	4	..	..	..	41
Middlesex College of Medicine and Surgery	C	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	2
MICHIGAN																																									
Detroit College of Medicine and Surgery	A	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	1	1	..	..	7	1	..	3	..	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	19
University of Michigan Medical School	A	..	..	..	..	2	..	..	..	3	1	..	..	2	2	..	6	..	..	..	2	8	4	18	2	2	..	..	2	..	..	5	..	..	1	1	..	..	1	12	..	1	..	75
MINNESOTA																																									
University of Minnesota Medical School	A	..	..	1	..	..	..	..	..	1	..	..	..	..	2	..	..	..	..	..	..	..	..	42	25	..	1	..	2	..	..	2	..	..	..	..	..	..	1	..	..	..	77
MISSISSIPPI																																									
University of Mississippi School of Medicine	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
MISSOURI																																									
American Medical University	C	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Kansas City University of Physicians and Surgeons	C	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1
Missouri College of Medicine and Science	C	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	2	..	..	1	..	..	..	..	2	..	..	..	..	..	2	..	..	..	7
St. Louis University School of Medicine	A	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	3	..	..	..	..	..	..	..	2	1	5	..	..	1	..	..	3	..	..	..	..	..	..	..	..	..	17
University of Missouri School of Medicine	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1
Washington University School of Medicine	A	1	1	..	1	..	..	..	..	..	..	1	..	..	1	..	1	..	..	..	1	..	..	6	..	1	..	..	..	..	..	2	..	..	..	..	..	2	..	..	..	18

† Twelve students not listed but included with Mayo Foundation.

* The statistics given are for the calendar year 1927.

† Twelve students not listed but included with Mayo Foundation.

* The statistics given are for the calendar year 1927.

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(Continued from page 485)

ENROLMENT IN GRADUATE MEDICAL SCHOOLS, 1926-1927

Data were obtained from the forty-one graduate medical schools regarding the enrolments of physician-students during 1926-1927 and the subjects selected by each. From the information furnished, tabulations are presented in the same manner as were the reports for 1922. Altogether, 2,336 physician-students were enrolled, of whom 1,019 were reported to have obtained intern training; 135 were foreign students; thirty-three were not verified, and of the 1,149 other graduate students, all had been in active practice for five or more years.

YEARS OF PRACTICE OF GRADUATE STUDENTS

The number of years the graduate students had been in practice is shown in table I. Of the 2,336 students enrolled, the largest number, 570, reported less than five years of practice, and probably for most of them the practice was limited to their hospital intern work. The next largest group, 557, was of physicians who had been in practice between five and ten years; next came 353 with ten to fifteen years of practice, and 339 with fifteen to twenty years of practice. Consequently, of all the students enrolled in graduate medical schools during 1926-1927, 1,249 (53.5 per cent) had been in practice between five and twenty years. Information on this point was not reported for forty-two students.

In the tabulations published for 1922 the total number of graduate students was 2,915, and at that time the largest number (581) consisted of those who had been in practice from five to ten years. At that time, also, 1,983, or 68.0 per cent of all graduate students had been in practice twenty years or less. Last year, 1,724, or 49.7 per cent, had been in practice for five or more years.

GRADUATE STUDENTS FROM EACH STATE

According to table II, the greatest number of students, 330, came from New York, followed by 155 from Pennsylvania; 144 each from Texas and Massachusetts; 97 from Minnesota; 93 from New Jersey, and 92 from California; while the smallest numbers of students came from: Nevada, 1; Vermont and Delaware, each 2; Wyoming, 4; Utah, 6; Montana, 7, and North Dakota, 7.

In table III, however, based on the total number of physicians in each state, it is shown that Minnesota, Rhode Island, New Jersey, Texas, Massachusetts and New Mexico, respectively, sent the greatest percentages to graduate medical schools. This table also shows a reduction since 1922 in the number of students from all states, except the District of Columbia, New Jersey, New York and Texas. In 1922, five states, Minnesota, South Dakota, Rhode Island, North Dakota and Utah, had more than 4 per cent of their total number of physicians in attendance at graduate schools, whereas, in 1927, only one state, Minnesota, had more than 3 per cent. In 1922, percentages of all states varied from 5.2 to 1.1, and in 1927 they varied from 3.2 to 0.4, indicating a more uniform distribution of post-graduate students in 1927. A three per cent decrease since 1922 is shown in North Dakota and Utah, whereas the highest increase, 0.6 per cent, occurred in the District of Columbia.

POPULATION OF RESIDENCE CITIES

The population of the cities or towns from which the students came is shown in table IV. Of the 2,336 students, the largest number, 513, came from cities or towns of more than 500,000 inhabitants. The next largest number, 415, is of those coming from cities of between 100,000 to 500,000 of population. The third largest figure, 366, is of those coming from towns of less than 2,500 inhabitants. That an increasing number of physicians taking graduate courses now come from large cities where hospitals are located fits with the tendency, as shown in table I, for physicians to secure graduate training earlier after graduation. The fact that 366 came from towns of less than 2,500 would indicate that physicians from smaller communities are preparing themselves for better work either in their home town or in some larger city. Some others are intending to join with other physicians in forming partnerships or group clinics.

SUBJECTS SELECTED BY GRADUATE STUDENTS

Table V was prepared to show the trend of post-graduate study. When students were registered for two or more courses they have been listed under their major study so that the correct total may be maintained. This table shows that diseases of the eye, ear, nose and throat was the most popular specialty, 328 physicians having registered for that group. Other subjects were selected as follows: general surgery, 276; general medicine, 275; pediatrics, 231; obstetrics and gynecology, 134, and public health, 126. It is also noteworthy that 964 registered for surgery and surgical specialties and 886 for medicine and medical specialties, while 128 selected combined courses in medicine and surgery. Eighty-eight students selected basic medical subjects as their major study. In a great many instances, however, physicians studied basic sciences in conjunction with surgical or medical specialties.

MEDICAL SCHOOLS REPRESENTED

The medical schools from which graduate students were enrolled are shown in table VI. This information was not reported regarding twenty-one students; eight were not medical graduates; ninety-four came from Canadian schools, ten from United States possessions, 178 from foreign schools, 371 from extinct schools and, of the latter, 230 (given under "Miscellaneous") are from medical schools which became extinct through merging with other schools. The largest numbers of graduates are 81 from Jefferson Medical College, 77 from the University of Minnesota, 75 from the University of Michigan, 74 from the University of Pennsylvania, 70 from Rush Medical College, 63 each from Long Island College Hospital and Columbia University, and 61 graduated from University and Bellevue Hospital Medical College. Of the 1,654 who graduated from classified medical colleges still existing, 1,603 were from class A, 36 from class B and 15 from class C medical schools.

IN CONCLUSION

The present indications are that universities having medical schools, to an increasing extent, are going to develop graduate medical schools, whereby they can make a larger use of the abundance of clinical material which is available. The establishing of graduate medical schools also will help to solve the problem of the overcrowded medical curriculum, inasmuch as some subjects now given in the undergraduate school can be transferred to the graduate school. This, therefore, gives promise of being an important development in medical education.

DESCRIPTION OF MEDICAL COLLEGES

Below are given brief descriptions of the medical colleges in the United States and Canada that are legally chartered to teach medicine, of which ten do not grant degrees. The name, address, year of organization, history and date when first class graduated are given in each instance. Unless otherwise stated, a class graduated each subsequent year. Where official reports have been received from the college, information regarding faculty, entrance requirements, length of term, fees, students (excluding specials and postgraduates), graduates, name of dean and next session is given without discrimination. In a few instances in which such reports were not received, the information published is from other reliable sources. Figures for graduates include all who graduated since July 1, 1927. Statements have been added showing the preliminary requirements held by state licensing boards where those requirements include one or two years of college work. Thirteen states, Alaska (Ter.), Delaware, Illinois, Iowa, Michigan, New Jersey, North Dakota, Pennsylvania, Rhode Island, South Dakota, Utah, Washington and Wisconsin, require also a year's hospital internship as an essential qualification for a license.

ALABAMA

In order to secure licenses to practice medicine in Alabama, students must complete two years of work in an approved college of liberal arts prior to entering on the study of medicine.

Tuscaloosa

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE, University Campus, Tuscaloosa.—Organized in 1859 at Mobile as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868, inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907, when all property was transferred to the University of Alabama. In 1920, clinical teaching was suspended and the medical school was removed to the university campus at Tuscaloosa. Coeducational since 1920. The faculty includes 8 professors and 6 instructors, assistants, etc., a total of 14. The course of study covers two years of thirty-six weeks each. The tuition fee each year is $222. The Dean is Dr. Stuart Graves. Total registration for 1927-1928 was 90. The sixty-third session begins Sept. 10, 1928, and ends May 28, 1929.

ARKANSAS

To secure licenses to practice medicine in Arkansas, students must complete two years of collegiate work before beginning the study of medicine.

Little Rock

UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE, 300 W. Markham Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918, but resumed in 1923. Co-educational. The faculty consists of 27 professors and 38 lecturers and assistants, total 65. The curriculum embraces four years of nine months each. Entrance requirements are two years of collegiate work in addition to a four-year high school course. The fees for the four years, respectively, for residents of Arkansas are $120, $115, $110 and $110; nonresidents are charged $100 additional each year. The Dean is Dr. Frank Vinsonhaler. The total registration for 1927-1928 was 134; graduates, 29. The fiftieth session begins Sept. 12, 1928, and ends May 28, 1929.

CALIFORNIA

To secure a license to practice medicine in California under the "physician's and surgeon's" certificate, students must complete at least a year of work of college grade before beginning the study of medicine.

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus, Berkeley; Third and Parnassus Avenues, San Francisco.—Organized in 1863 as the Toland Medical College. The first class graduated in 1864. In 1872 it became the Medical Department of the University of California. In 1909 the College of Medicine of the University of Southern California, at Los Angeles, by legislative enactment became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged, and elective chairs in homeopathic materia medica and therapeutics were provided. Co-educational. Three years of collegiate work are required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The faculty is composed of 74 professors and 177 associates and assistants, a total of 251. The course covers four years of eight months each, and an additional fifth year consisting of an internship in a hospital or of special work in a department of the medical school. Fees for the four years, respectively, for residents of California are $290, $247.50, $235 and $225; nonresidents are charged $300 additional each year. The Dean is Dr. Langley Porter. Total registration for 1927-1928 was 208; graduates, 46. The fifty-sixth session begins Aug. 21, 1928, and ends May 15, 1929.

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda; the clinical departments at Los Angeles on property bounded by Boyle, Michigan, Bailey and New Jersey streets. Co-educational. The faculty is composed of 52 professors and 147 associates, assistants and instructors, a total of 199. The course is of five years including a hospital internship. During first two years students spend entire twelve months in the "cooperative plan," alternate months being spent in hospitals. The work of the first two years is given at Loma Linda and the third and fourth years at Los Angeles. Two years of college work are required for admission. The total fees for the four years, respectively, are $252.50, $244.50, $328.50 and $312.50. The Deans are Dr. Edward H. Risley, Loma Linda, and Dr. Newton Evans, Los Angeles. The total registration for 1927-1928 was 306; graduates, 30. The twentieth session begins Sept. 4, 1928, and ends June 23, 1929.

San Francisco-Stanford University

STANFORD UNIVERSITY SCHOOL OF MEDICINE, Campus, 2398 Sacramento Street, San Francisco.—Organized in 1908 when, by an agreement, the interests of Cooper Medical College were taken over. The first class was graduated in 1913. Co-educational since organization. The faculty consists of 84 professors and 97 lecturers, assistants, etc., a total of 181. Three years of collegiate work are required for admission. The course covers four years of nine months each, plus a fifth year of practice or intern work. The fees for the four years, respectively, are $330, $314, $306 and $306. The Dean is Dr. William Ophüls, San Francisco. The total registration for 1927-1928 was 192; graduates, 38. The nineteenth session begins Oct. 2, 1928, and ends June 12, 1929.

COLORADO

No person will be granted a license to practice medicine in Colorado who is not a graduate of a school teaching the healing art as approved by the Colorado Board of Medical Examiners.

Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine were merged Jan. 1, 1911. Co-educational since organization. The faculty embraces 73 professors and 70 lecturers, instructors and assistants, a total of 143. The work embraces four years of nine months each and a year's internship in a hospital. The entrance requirements are two years of college work counting toward a degree in arts in an accredited college or university. The fees for residents of Colorado, for each of the four years are, respectively, $201, $206, $181 and $191. Nonresidents pay $105 more each year. The Dean is Dr. Maurice H. Rees. The total registration for 1927-1928 was 187; graduates, 37. The forty-seventh session begins Sept. 24, 1928, and ends June 10, 1929.

CONNECTICUT

To practice in Connecticut students must have completed at least one year of college work before entering on the study of medicine.

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE, 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. Co-educational since 1916. The faculty consists of 77 professors and 87 lecturers and assistants, a total of 164. The requirements for admission are three years of collegiate work plus completion of courses in physics, inorganic chemistry, qualitative analysis, general biology, organic chemistry and physical chemistry or laboratory physics, all equivalent to the courses in these subjects in Yale University. The student also must have two years of French or German. The course covers four years of nine months each. The fees for the four years, respectively, are $305, $300, $300 and $320. The Dean is Dr. Milton C. Winternitz. The total registration for 1927-1928 was 214; graduates, 51. The one hundred and sixteenth session begins Sept. 27, 1928, and ends June 12, 1929.

DISTRICT OF COLUMBIA

Washington

GEORGE WASHINGTON UNIVERSITY MEDICAL SCHOOL, 1335 H Street, N.-W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it

absorbed the National University Medical Department. In 1904, by an act of Congress, the title of George Washington University was granted to the institution. Co-educational since 1884. The faculty is composed of 55 professors and 88 instructors, demonstrators and assistants, a total of 143. Two years of collegiate work are required for admission. The course covers four years of thirty-two weeks each. The fees for the four years, respectively, are $416, $352, $352 and $342. The Dean is Dr. William C. Borden. The total registration for 1927-1928 was 275; graduates, 63. The one hundred and fourth session begins Sept. 19, 1928, and ends June 12, 1929.

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 920 H Street, N.-W. —Organized in 1851. The first class graduated in 1852. The faculty contains 70 professors, 80 instructors and assistants; total 150. Two years of collegiate work are required for entrance. The course of study covers four terms of eight and one-half months each. The fees for each of the four sessions, respectively, are $310, $285, $275 and $285. The Dean is Dr. George M. Kober. The registration for 1927-1928 was 412; graduates, 72. The seventy-eighth session begins Sept. 26, 1928, and ends June 12, 1929.

HOWARD UNIVERSITY SCHOOL OF MEDICINE, Fifth and W Streets, N.-W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Co-educational since 1869. Colored students compose a majority of those in attendance. The faculty comprises 30 professors and 28 lecturers and assistants, 58 in all. The admission requirements are at least two years of collegiate work, including physics, chemistry, botany and zoology, English and French or German. The course covers four years of thirty-three weeks each. The fees of each of the four sessions, respectively, are $212.50, $207.50, $207.50 and $214.50. The Dean is Dr. Edward A. Balloch. Registration for 1927-1928 was 233; graduates, 55. The sixty-first session begins Oct. 1, 1928, and ends June 7, 1929.

GEORGIA

To secure a license to practice medicine in Georgia, students must complete at least 60 semester hours of college work, including 12 semester hours of each of physics and biology before entering on the study of medicine.

Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE, 50 Armstrong Street and Druid Hills.—Organized in 1854. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915; assumed present title in 1917. Two years of college work required for admission. The faculty has 15 professors and 116 associates and assistants, a total of 131. The course of study is four years of thirty-two weeks each. The fees for each of the four years, respectively, are $260, $250, $250 and $275. The Dean is Dr. Russell H. Oppenheimer. Total registration for 1927-1928 was 202; graduates, 61. The next session begins Sept. 26, 1928, and ends June 4, 1929.

Augusta

UNIVERSITY OF GEORGIA MEDICAL DEPARTMENT, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia. Property transferred to university in 1911. Classes were graduated in 1833 and in all subsequent years except 1862 and 1863. Co-education was begun in 1920. The faculty includes 24 professors and 48 assistants, 72 in all. Two years of college work required for entrance. The course is four years of thirty-four weeks each. The fees for each of the four years, respectively, are $105, $100, $100 and $100 for residents of Georgia, and $300 each year for non-residents. The Dean is Dr. William H. Goodrich. The total registration for 1927-1928 was 142; graduates, 36. The one-hundredth session begins Sept. 22, 1928, and ends June 3, 1929.

ILLINOIS

To be eligible for license to practice medicine in Illinois, students must complete two years of collegiate work, including courses in physics, chemistry, biology and a modern language before entering on the study of medicine. In addition to their four year course in medicine they must complete also a year's internship in a hospital.

Chicago

RUSH MEDICAL COLLEGE OF THE UNIVERSITY OF CHICAGO.—Founded in 1837; organized in 1843; was the medical department of Lake Forest University from 1887 until 1898, when it became affiliated with the University of Chicago, and in 1924 became an integral part of the University of Chicago. The first class graduated in 1844. Co-educational since 1898. The faculty is composed of 115 professors, 148 associates, instructors, etc., a total of 263. The requirements for admission are four years of college work, including courses in college chemistry, physics and biology, and a reading knowledge of German or French. Classes are limited to 100 students in each of the freshman and sophomore classes, and to 140 students in each of the clinical years. No application for admission is accepted after June 1. The school operates under the "quarter system" in which the year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. The course covers four years of eight and a half months each, and a fifth year, consisting of a hospital internship or of a fellowship in one of the departments. All freshman and sophomore studies are given at the University of Chicago. The clinical years are given in the building at the corner of Wood and Harrison Streets. The tuition fees for each of the four years, respectively, are $310, $300, $315 and $325. The Dean of the medical students is B. C. H. Harvey, M.B. Total registration for 1927-1928 was 600; graduates, 134. The eighty-fourth session begins Sept. 28, 1928, and ends June 12, 1929.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 303 East Chicago Avenue.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869, but retained the name of Chicago Medical College until 1891, when the present name was taken. Became an integral part of Northwestern University in 1905. Co-educational since 1926. The faculty comprises 99 professors and 183 lecturers and assistants, a total of 282. The requirements for admission are such as will admit to the College of Liberal Arts of Northwestern University, plus two years of college work, including courses in physics, chemistry, biology and a modern language. The course covers four years of eight months each and a year's internship in an approved hospital. The total fees are $355 each year. The Dean is Dr. Irving S. Cutter. The total registration for 1927-1928 was 478; graduates, 121. The sixty-ninth session begins Oct. 2, 1928, and ends June 17, 1929.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, 508 S. Honore Street.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897 and an integral part in 1910. The relationship with the university was canceled in June, 1912, but restored in March, 1913, when the present title was assumed. Co-educational since 1898. Two years of collegiate work are required for admission. The curriculum covers four years of thirty-two weeks each, and a year's internship in an approved hospital. The faculty is composed of 77 professors, 165 assistants and instructors, a total of 242. The tuition fees are $165 each year for resident students and $35 extra for nonresidents. The Dean is Dr. David John Davis. The total registration for 1927-1928 was 469; graduates, 107. The forty-seventh session begins Oct. 1, 1928, and ends June 8, 1929.

LOYOLA UNIVERSITY SCHOOL OF MEDICINE, 706 S. Lincoln St., Chicago. —Organized in 1868 as the Bennett College of Eclectic Medicine and Surgery. Eclecticism dropped and title of Bennett Medical College assumed in 1909. First class graduated in 1870, and a class graduated each subsequent year. Absorbed the Illinois Medical College in 1910 and the Reliance Medical College in 1911. In 1910 it became by affiliation the School of Medicine of Loyola University; the university assumed full control in 1915. Took over by purchase the Chicago College of Medicine and Surgery in 1917. Loyola University has been co-educational since 1900. Two years of college work are required for admission. The course of study is five years including an internship in a hospital. The faculty is composed of 80 professors, 92 assistants and instructors, a total of 172. The total fees are $300 each year. The Dean is Dr. Louis D. Moorhead. The total enrolment for 1927-1928 was 439; graduates, 72. The next session begins Oct. 1, 1928, and ends June 15, 1929.

CHICAGO MEDICAL SCHOOL, 3832 Rhodes Avenue.—Organized in 1911 as the Chicago Hospital College of Medicine; chartered in 1912. In December, 1917, the classes of the Jenner Medical College were transferred to it. Reorganized under the present name in 1918. Co-educational since 1919. Organized as a day school on Aug. 20, 1927. A year's internship in a hospital is required for graduation. The total fees are $300 each year. Total registration for 1927-1928 was 141; graduates, 34. *Official reports state that the diplomas from this college are not recognized by the licensing boards of forty-seven states.*

INDIANA

Students who intend to practice medicine in Indiana must complete two years of collegiate work, in addition to an accredited four-year high school course, prior to beginning the study of medicine.

Bloomington and Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1903, but did not give all of the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879), merged into it. The first class was graduated in 1908. Co-educational since organization. The faculty consists of 65 professors and 140 lecturers, associate and assistants, a total of 205. Two years of collegiate work are required for admission. The work of the first year is emphasized only at Bloomington. The work of the other three years is all at Indianapolis. The fees each year are $175 for residents of Indiana and $250 for nonresidents. Matriculation fee, $15; microscope fee, $5 to $7.50 per semester. A fifth optional intern year leading to the "M.D. cum laude" has been added. The Dean at Bloomington is Dr. B. D. Myers; the Dean is Dr. Charles P. Emerson, Indianapolis. The total registration for 1927-1928 was 417; graduates, 92. The next session begins Sept. 10, 1928, and ends June 10, 1929.

IOWA

Students who desire to practice medicine in Iowa must complete two years of work in an approved college of liberal arts prior to beginning the study of medicine, this preliminary college work to have included courses in physics, chemistry, biol-

ogy and English; they must also have completed a year's internship in an approved hospital.

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Co-educational since 1870. The faculty is made up of 38 professors, 56 lecturers, demonstrators and assistants, a total of 94. Two years of college work, including courses in physics, chemistry, biology, French or German and English, are required for admission. The course of study covers four years of thirty-four weeks each. The tuition fee is $186 each year for residents of Iowa and $350 for nonresidents, plus a matriculation fee of $10 and a graduation fee of $15. The Dean is Dr. Henry S. Houghton. Total registration for 1927-1928 was 463; graduates, 98. The fifty-ninth session begins Sept. 17, 1928, and ends June 3, 1929.

KANSAS

Students who desire to practice medicine in Kansas must complete at least two years of collegiate work, including college courses in physics, chemistry and biology in addition to an accredited four-year high school course.

Lawrence and Kansas City

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—Organized in 1880. It offered only the first two years of the medical course until in 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. First class graduated in 1906. The clinical courses are given at Kansas City. Absorbed Kansas Medical College in 1913. Co-educational since 1880. The faculty, including lecturers and clinical assistants, numbers 114. The requirements for admission are two years of collegiate work. The course covers four years of nine months each. The total fees for residents of the state for each of the four years are, respectively, $162, $154, $155 and $160. For nonresidents the fees are $50 additional each year. The Dean is Dr. Harry Roswell Wahl. The total registration for 1927-1928 was 208; graduates, 36. The forty-ninth session begins Sept. 20, 1928, and ends June 10, 1929.

KENTUCKY

To be eligible for license to practice medicine in Kentucky, students must complete two years of college work, including courses in physics, chemistry, biology and a modern language, prior to beginning the study of medicine.

Louisville

UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE, First and Chestnut Streets.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated in each subsequent year except in 1863. In 1846 name changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908 the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Co-educational since organization. Two years of college work required for admission. The faculty numbers 119. Students limited to 85 Freshmen, 64 Sophomores, 70 Juniors and 70 Seniors. Course covers four years of thirty-two weeks each exclusive of vacations and examinations. Fees for four years are, respectively, $315, $315, $320 and $330. Total registration for 1927-1928 was 283; graduates, 65. Next session begins Sept. 17, 1928, and ends May 31, 1929.

LOUISIANA

Students who desire to practice medicine in Louisiana must complete, at an approved college or university two years of college work, including biology, physics, chemistry and a modern language, before entering on the study of medicine.

New Orleans

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, University Campus and 1551 Canal Street.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University of Louisiana in 1884. Present name in 1913, when it became the School of Medicine of the College of Medicine of the Tulane University of Louisiana. Co-educational since 1915. The faculty has 28 professors and 123 assistant professors, instructors and assistants, a total of 151. The course covers four years of thirty-two weeks each. Two years of collegiate work are required for admission. Total fees for each of the four years, respectively, are $305, $295, $280 and $310. The Dean is Dr. Charles C. Bass. The total registration for 1927-1928 was 426; graduates, 100. The ninety-fifth session begins Sept. 27, 1928, and ends June 12, 1929.

MARYLAND

To be eligible to practice medicine in Maryland, students, in addition to a four-year high school education, must complete at least two years of college work, including courses in physics, chemistry, biology, prior to beginning the study of medicine.

Baltimore

JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE, Washington and Monument Streets.—Organized in 1893. Co-educational since organization. The first class graduated in 1897. The faculty consists of 63 professors and 237 clinical professors, etc., a total of 300. The requirements for admission demand that the applicant possess a collegiate degree and have a knowledge of French and German (two years each of college instruction), physics and biology, such as may be obtained from a year's course, and a three years' course in chemistry. The course extends over four years of eight and one-half months each. The total fees for each year are $410. The Dean is Dr. Lewis H. Weed. Total registration for 1927-1928 was 280; graduates, 71. The thirty-sixth session begins Oct. 2, 1928, and ends June 11, 1929.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND THE COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Greene Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged into it in 1913. In 1915 the College of Physicians and Surgeons was merged and the present name assumed. Co-educational since 1918. The faculty consists of 86 professors and 134 instructors and assistants, a total of 220. Two years of college work are required for admission. The course covers four years of eight months each. The total fees are $330 each year for residents of the state; $480 each year for nonresidents. The Dean is Dr. J. M. H. Rowland. Total registration for 1927-1928 was 391; graduates, 80. The one hundred and twenty-second session begins Oct. 1, 1928, and ends June 8, 1929.

MASSACHUSETTS

Boston

HARVARD UNIVERSITY MEDICAL SCHOOL, 240 Longwood Avenue.—Organized in 1782. The first class graduated in 1788. It has a faculty of 90 professors and 284 instructors and assistants, a total of 374. Candidates for admission must present a college degree or two years of work leading to such a degree with standing in the upper third of the class. The college work must include a year of physics, biology, general chemistry, a half year of organic chemistry, and a reading knowledge of French or German. The total fee for each of the four years is $400 plus $5 the first year for matriculation. The Dean is Dr. David L. Edsall. The total registration for 1927-1928 was 521; graduates, 131. The one hundred and forty-sixth session begins Sept. 24, 1928, and ends June 20, 1929.

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class graduated in 1874. Became nonsectarian in 1918. Co-educational since organization. Two years of collegiate work are required for admission. The faculty includes 22 professors, 136 associates, etc., making a total of 158. The course covers four years of thirty-two weeks each. Total fees for each of the four years, respectively, are $368.50, $364, $339 and $339. The Dean is Dr. Alexander S. Begg. Total registration for 1927-1928 was 205; graduates, 41. The fifty-sixth session begins Sept. 26, 1928, end ends June 17, 1929.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Co-educational since 1894. It has a faculty of 54 professors and 132 assistants, lecturers, etc., a total of 186. Two years of collegiate work are required for admission. The course covers four years of eight months each. The total fees for each of the four years are $355, $350, $350 and $360. The Dean is Dr. Albert W. Stearns. Total registration for 1927-1928 was 489; graduates, 107. The thirty-third session begins Sept. 19, 1928, and ends June 8, 1929.

COLLEGE OF PHYSICIANS AND SURGEONS, 517 Shawmut Avenue.—Organized in 1880. The first class graduated in 1882. Total attendance of medical students, 1927-1928, was about 50. There were 7 graduates. *This college has been reported not recognized by the Massachusetts Medical Society and by the licensing boards of forty-eight states.*

Cambridge

MIDDLESEX COLLEGE OF MEDICINE AND SURGERY, Cambridge.—Organized in 1914 under the charter of the Worcester Medical College, which became extinct in 1859. A class was graduated in 1915 and each subsequent year. Was closely related in its interests with an osteopathic college and granted a liberal advanced standing for work done in such colleges. In 1927 it declared itself to be eclectic. The total fees for each of the four years are $165, $180, $210 and $185. Total registration for 1927-1928, as published in its announcement, was 140; graduates, approximately 20. *This college has been reported as not recognized by licensing boards of forty-eight states.*

MICHIGAN

Students who desire to practice medicine in Michigan, in addition to four-year high school education, must complete two years of work in an approved college, including courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine; they must also have completed an internship in a hospital.

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Co-educa-

tional since organization. It has a faculty of 23 professors, 105 instructors, lecturers and assistants, a total of 128. The entrance requirements are two years of college work, including courses in chemistry, physics and biology, with laboratory work, and a reading knowledge of French or German. Seventy semester hours will be required beginning September, 1929. The curriculum embraces four years of nine months each. The total fees for Michigan students are $188 per year, plus a matriculation fee of $10; for nonresidents, $80 per year additional. The matriculation fee for nonresidents is $25. Laboratory fee, second and third years $5.00; fourth year, $2.50. The Dean is Dr. Hugh Cabot. The total registration for 1927-1928 was 658; graduates, 104. The seventy-ninth session begins Sept. 17, 1928, and ends June 17, 1929.

Detroit

DETROIT COLLEGE OF MEDICINE AND SURGERY, 1516 St. Antoine St.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with present title in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. Co-educational since 1917. Entrance requirements are three years of college work. The faculty embraces 33 professors, 101 lecturers, etc., a total of 134. The course covers four years of nine months each and a fifth hospital intern year. The total fees each year for residents of Detroit are $200; for nonresidents, $285. The Dean is Dr. W. H. MacCraken. The total registration for 1927-1928 was 264; graduates, 36. The forty-fourth session begins Sept. 27, 1928, and ends June 21, 1929.

MINNESOTA

Students intending to practice medicine in Minnesota, in addition to a four-year high school course, must complete two years of college work, including courses in physics, chemistry and biology, prior to beginning the study of medicine.

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Co-educational since organization. The faculty includes 151 professors and 168 instructors and assistants, a total of 319. The curriculum covers four years of nine months each, and a year's internship in an approved hospital. The school is operated on the four-quarter plan. The entrance requirements are two years of university work, which must include six semester credits of rhetoric, eight semester credits of physics; thirteen credits of general chemistry, qualitative and quantitative analysis and organic chemistry; eight credits of zoology, and a reading knowledge of scientific French or German. Students are required to secure a degree of B.S. or A.B. before receiving the degree of Bachelor of Medicine (M.B.) which is granted at the end of the four-year course. The M.D. is conferred after a year of intern work or of advanced laboratory work, or of public health work has been completed. Classes are graduated three times a year, in March, June and December. Total fees are $195 for residents and $225 for nonresidents, each year of three quarters. The Dean is Dr. E. P. Lyon. The total registration for 1927-1928 was 461; graduates, 112. The fortieth sessions begins Oct. 1, 1928, and ends June 15, 1929. The summer quarter began June 15.

MISSISSIPPI

Students desiring to practice medicine in Mississippi, in addition to a four-year high school education, must complete two years of work in an approved college or university, including courses in physics, chemistry, biology and a modern language, before entering on the study of medicine.

Oxford

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE.—Organized in 1903. Co-education since organization. Gives only the first two years of the medical course. In 1908 a clinical department was established at Vicksburg, but was discontinued in 1910 after graduating one class. The session extends over eight and a half months. Entrance requirements are two years of collegiate work. The total fees each year for residents are $163; for nonresidents, $50 per year additional. The faculty numbers 24. The Dean is Dr. J. O. Crider. The total registration for 1927-1928 was 66. The twenty-sixth session begins Sept. 19, 1928, and ends June 4, 1929.

MISSOURI

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855, but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Co-educational since 1872. The faculty includes 10 professors and 21 assistant professors, lecturers, etc., a total of 31. The course covers two years of thirty-five weeks each. The entrance requirements are three years of college work including French or German, 8 hours; general zoology, 8 hours; physics, 8 hours; inorganic chemistry, 8 hours; organic chemistry, 5 hours, and general bacteriology, 3 hours. Total fees each year are $136 and $126. Nonresidents of the state pay $10 per term extra. The Dean is Dr. Guy L. Noyes. Total registration for 1927-1928 was 76. The next session begins Sept. 11, 1928, and ends June 5, 1929.

Kansas City

AMERICAN MEDICAL UNIVERSITY.—Chartered July 29, 1926. It is the successor of the nominally eclectic Kansas City College of Medicine and Surgery, occupies the same site and is apparently being operated by the same interests as its predecessor. For these reasons and, based on information published in regard to it, no rating higher than Class C can be given to it. Its predecessor, the Kansas City College of Medicine and Surgery was distinctly shown to be involved in the Missouri diploma mill scandal of 1923-1925, and as a consequence its charter was revoked June 23, 1926. The newly chartered institution under the present title was opened August 9, 1926.

KANSAS CITY UNIVERSITY OF PHYSICIANS AND SURGEONS, 729 Troost Street.—Chartered in 1903 as the Central College of Osteopathy; charter amended in 1917, authorizing it to grant degrees in medicine, and the name was changed to the Central College Medical Department. Present title under a separate charter in 1918. Said to teach three years of osteopathy and one year of medicine. The total registration for 1927-1928 was 40; graduates, 14. Rated Class C by the Council on Medical Education and Hospitals. *Reported not recognized by the licensing boards of Missouri and of forty-eight other states.*

St. Louis

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. In 1835 it was chartered as an independent institution under the name of St. Louis Medical College. The first class graduated in 1843. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Co-educational since 1918. The faculty comprises 38 professors and 163 lecturers, instructors, et., a total of 201. Three years of college work are required for admission, including courses in English, physics, chemistry and biology, and a reading knowledge of German or French. The course is four years of eight months each. The total fees for the four years are, respectively, $374, $364, $369 and $374. The Dean is Dr. McKim Marriott. The total registration for 1927-1928 was 306; graduates, 74. The next session begins Sept. 24, 1928, and ends June 11, 1929.

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Avenue. — Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical Department of St. Louis University in 1903. The faculty is composed of 76 professors and 191 lecturers and assistants, a total of 267. Two years of collegiate work are required for admission. The curriculum covers four years of thirty-two weeks each. An eight weeks' summer season begins June 1. The total fees are $375 each year. The Dean is Alphonse M. Schwitalla, Ph.D. The total registration for 1927-1928 was 512; graduates, 93. The next session begins Oct. 1, 1928, and ends June 1, 1929.

MISSOURI COLLEGE OF MEDICINE AND SCIENCE.—This is a new title applied to the St. Louis College of Physicians and Surgeons as provided by a charter dated April 8, 1926, and in the announcement of 1926-1927 both names appear. The St. Louis College of Physicians and Surgeons since 1909 has been a Class C institution and was involved in the Missouri diploma mill scandal of 1923-1925, and as a consequence, its charter was revoked May 23, 1927. Nevertheless, about a month later a dozen or more "graduates" of the institution under its new name, applied for licenses in Massachusetts.

NEBRASKA

Omaha

CREIGHTON UNIVERSITY SCHOOL OF MEDICINE, 306 North 14th Street.—Organized in 1892 by the John A. Creighton Medical College. Present title in 1921. The first class graduated in 1893. Co-educational since organization. It has a faculty of 39 professors and 41 instructors, lecturers and assistants, a total of 80. Two years of collegiate work are required for admission. The course of study embraces four years of eight months each. The total fees each year for the four years are, respectively, $265, $255, $235 and $240. The Dean is Dr. Hermann von W. Schulte. Total registration for 1927-1928 was 199; graduates, 45. The forty-seventh session begins Sept. 27, 1928, and ends June 6, 1929.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The first two years were given at Lincoln and the last two in Omaha until 1913, when all four years were transferred to Omaha. Co-educational since 1882. The faculty is composed of 60 professors and 70 lecturers and instructors, total 130. Two years of collegiate work are required for admission, including courses in physics, chemistry and zoology. The fees for each of the four years, respectively, are $212, $207, $207 and $207. The Dean is Dr. J. Jay Keegan. Total registration for 1927-1928 was 301; graduates, 65. The next session begins Sept. 14, 1928, and ends June 8, 1929.

NEW HAMPSHIRE

Students desiring to practice medicine in New Hampshire, in addition to a four-year high school education, must complete at least two years of work in an approved college of liberal arts, prior to beginning the study of medicine.

DARTMOUTH MEDICAL SCHOOL.—Organized as New Hampshire Medical Institute in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Clinical teaching was discontinued in 1914. The faculty is made up of 14 professors and 4

instructors, a total of 18. Three years of collegiate work are required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The fees for the first year are $400 and $410 for the second year. The Dean is Dr. John P. Bowler. The total registration for 1927-1928 was 37. The next session opens Sept. 20, 1928, and ends June 18, 1929.

NEW YORK

Students who desire to practice in New York must complete two years of college work, including courses in physics, chemistry, biology, English composition and literature, before entering on the study of medicine.

Albany

ALBANY MEDICAL COLLEGE, 47 New Scotland Avenue.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed education control. Co-educational since 1915. The faculty is composed of 25 professors and 53 instructors, assistants, etc., a total of 78. Two years of collegiate work, including college courses in physics, chemistry (including organic and analytic), biology, English, and a modern foreign language, are required for admission. The curriculum covers four years of eight months each. The total fees for the four years, respectively, are $320, $315, $305 and $305. The Dean is Dr. Thomas Ordway. The total registration for 1927-1928 was 112; graduates, 26. The ninety-eighth session begins Sept. 24, 1928, and ends June 10, 1929.

Buffalo

UNIVERSITY OF BUFFALO SCHOOL OF MEDICINE, 24 High Street. —Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Co-educational since organization. The faculty is composed of 62 professors and 133 lecturers, assistants, etc., a total of 195. Two years of collegiate work, including college courses in physics, chemistry, biology, English and French or German, are required for admission. The course covers four years of eight months each. The total fees for each of the four years are $527, $517, $517 and $527. The Acting Dean is Dr. Edward W. Koch. Total registration for 1927-1928 was 270; graduates, 59. The eighty-third session begins Sept. 19, 1928, and ends June 4, 1929.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 630 West 168th Street.—Organized in 1807 by the regents of the University of the State of New York as their medical department. The first class graduated in 1811. In 1860 it became, by affiliation, the Medical Department of Columbia College. It was made a permanent part of Columbia College by legislative enactment in 1891. That institution became Columbia University in 1896. Co-educational since 1917. The faculty is composed of 195 professors and 352 instructors, demonstrators, etc., a total of 547. Two years of collegiate work of 72 points, including courses in physics, chemistry, biology, English and either French or German, are required for admission. The work covers four years of eight months each. The Dean is Dr. William Darrach. The total fees for the four years, respectively, are: $535, $526, $520 and $540. Total registration for 1927-1928 was 416; graduates, 92. The one hundred and twenty-first session begins Sept. 26, 1928, and ends June 4, 1929.

CORNELL UNIVERSITY MEDICAL COLLEGE, First Avenue and Twenty-Eighth Street, New York City, and Ithaca.—Organized in 1898. The first class was graduated in 1899. The work of the first year may be taken either in Ithaca or in New York. Co-educational since organization. The faculty is composed of 71 professors and 150 assistants, lecturers, instructors, etc., a total of 221. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges which will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the Bachelor degree on the completion of the year's work. The candidate must also have a knowledge of physics, chemistry, biology, English and a modern language. The fees for each of the four years are, respectively, $510, $500, $500 and $525. The Dean is Dr. G. Canby Robinson. Total registration for 1927-1928 was 233; graduates, 64. The thirty-first session begins Oct. 1, 1928, and ends June 13, 1929.

LONG ISLAND COLLEGE HOSPITAL, 350 Henry Street, Brooklyn. — Organized in 1858. The first class graduated in 1860. Co-educational since 1918. It has a faculty of 101 professors and 140 assistants, instructors, etc., a total of 241. A least two years of collegiate work, including college courses in physics, chemistry and biology, are required for admission. The course covers four years of eight months each. The fees for the four years, respectively, are $545, $560, $530 and $550. The Dean is Prof. Adam M. Miller. Total registration for 1927-1928 was 428; graduates, 102. The seventieth session begins Oct. 1, 1928, and ends June 1, 1929.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND FLOWER HOSPITAL, 450 East 64th Street.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869. Present title assumed in 1908. The first class graduated in 1861. Co-educational since 1919. The course covers four years of eight months each. It has a faculty of 61 professors and 73 lecturers and assistants, a total of 134. The total fees for the four years are, respectively, $490, $480, $470 and $485. The Dean is Dr. Claude A. Burrett. Total registration for 1927-1928 was 301; graduates, 61. The sixty-ninth session begins Sept. 17, 1928, and ends June 1, 1929.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE, 338 East Twenty-Sixth Street.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. It is the Medical Department of New York University. First class graduated in 1899. Co-educational since 1919. The faculty is composed of 83 professors, associate professors and assistant professors, and 149 lecturers, instructors, etc., in all, 232. The course covers four years of eight months each. Entrance requirements are 72 semester hours of collegiate work in a registered college leading to a bachelor's degree, including courses in physics, chemistry and biology. The fees for each of the four years, respectively, are $535, $523, $512 and $530. The Dean is Dr. Samuel A. Brown. Total registration for 1927-1928 was 448; graduates, 95. The next session begins Sept. 19, 1928, and ends June 12, 1929.

Rochester

UNIVERSITY OF ROCHESTER SCHOOL OF MEDICINE, Elmwood Ave. and Crittenden Blvd.—Organized in 1925 as the Medical Department of the University of Rochester. Co-educational since organization. The faculty is composed of 23 professors, 95 lecturers, assistants, instructors, etc., a total of 118. The work embraces a graded course of 4 years of 9 months each. Three years of collegiate work are required for admission. The total fees for each year are $300. The total registration for 1927-1928 was 77. The Dean is Dr. George H. Whipple. The fourth session begins Sept. 20, 1928, and ends June 17, 1929.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 309-311 South McBride Street.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Co-educational since organization. The faculty is composed of 30 professors and 127 associate and assistant professors, lecturers and instructors, a total of 157. Two years of a recognized college course are required for admission. The course covers four years of thirty-four weeks each. The fees for each of the first three years are $400, for the fourth year $410. The Dean is Dr. Herman G. Weiskotten. The total enrolment for 1927-1928 was 177; graduates, 36. The fifty-eighth session begins Sept. 21, 1928, and ends June 10, 1929.

NORTH CAROLINA

Students intending to practice medicine in North Carolina must complete two years of college work, including courses in physics, chemistry and biology in addition to 14 units of high school work, before beginning the study of medicine.

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Co-educational since 1914. Two years of collegiate work are required for admission. The faculty is composed of 8 professors and 2 instructors, a total of 10. The fees for each year are $220. The Dean is Dr. I. H. Manning. The total registration for 1927-1928 was 81. The forty-third session begins Sept. 20, 1928, and ends June 6, 1929.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE.—This school was organized in 1902. The faculty, including the professors of chemistry, physics and biology, numbers 9 professors and 7 assistants. Only the first two years of the medical course are offered. After the completion of freshman and sophomore college work and two years of medicine, a certificate will be given. The B.S. degree in medicine will be given only after completion of three years of college work and two years of medicine. Each annual course extends over nine months. The fees for the first year are $220 and $225 for the second year. The Dean is Dr. Thurman D. Kitchin. The total registration for 1927-1928 was 60. The twenty-seventh session begins Sept. 10, 1928, and ends May 31, 1929.

NORTH DAKOTA

Students intending to practice medicine in North Dakota, in addition to a four-year high school education, must complete two years of work in an approved college of liberal arts, including courses in Latin, physics, chemistry, biology, botany and zoology, prior to beginning the study of medicine, and must show evidence of having spent at least one year as an intern in a hospital.

University

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1905. Offers only the first two years of the medical course. Co-educational since organization. Two years' work in a college of liberal arts is required for admission. The fees are about $65 each year for resident students and $135 for nonresidents. The faculty consists of 5 professors and 9 instructors, a total of 14. The Dean is Dr. H. E. French. The total registration for 1927-1928 was 49. The twenty-third session begins Sept. 17, 1928, and ends June 11, 1929.

OHIO

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Eden and Bethesda Avenues, Mount Auburn—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged into the University, when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Co-educational since organization. Two years of college work are required for admission. The faculty consists of 83 professors and 143 associates, assistants, etc., a total of 226. The course covers four years of eight months each. A year's internship in an approved hospital is also required. The total fees for the four years are, respectively, $310, $310, $300 and $320, and if not legal citizens of Cincinnati, tuition will be $400 for first year, plus $10 breakage fee. The Dean is Dr. Arthur C. Bachmeyer. The total registration for 1927-1928 was 268; graduates, 65. The next session begins Sept. 24, 1928, and ends June 15, 1929.

ECLECTIC MEDICAL COLLEGE, 630 West Sixth Street.—Organized in 1833 at Worthington as the Worthington Medical College. Removed to Cincinnati in 1843. In 1845 it was chartered as the Eclectic Medical Institute. In 1857 the American Medical College, organized in 1839, was merged into it, and in 1859 the Eclectic College of Medicine and Surgery, organized in 1856, was merged into it. In 1910 it assumed its present title. Classes were graduated in 1833 and in all subsequent years except 1839 to 1843, inclusive. Co-educational since 1871. It has a faculty of 21 professors and 25 lecturers and assistants, a total of 46. The course covers four years of eight months each. The total fees for each year are $210. The Dean is Dr. R. L. Thomas. Total registration for 1927-1928 was 70; graduates, 35. The next session begins Sept. 20, 1928, and ends May 20, 1929.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, 2109 Adelbert Road.—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Co-educational since 1919. The faculty includes 53 professors and 141 lecturers, assistants, etc., a total of 194. The curriculum embraces three years of eight and one-half months each and one year of eleven months. Three years of college work are required for admission with the additional requirement that the student must secure the baccalaureate degree on completion of one or two years of work in the medical school. The total fees for each of the four years are, respectively, $375, $360, $350 and $360. The Dean is Dr. C. A. Hamann. The total registration for 1927-1928 was 244; graduates, 58. The eighty-sixth session begins Sept. 27, 1928, and ends June 13, 1929.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, Neil and Eleventh Avenues.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized 1847) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Co-educational since organization. The faculty consists of 42 professors and assistant professors, 66 lecturers, instructors, demonstrators, etc., a total of 108. Two years of collegiate work are required for admission. The course covers four years of 34 weeks each. Tuition fees are $183 each year for residents of Ohio, and $288 for nonresidents, plus a matriculation fee of $10. The Dean is Dr. John H. J. Upham. The total registration for 1927-1928 was 330; graduates, 78. The next session begins Oct. 2, 1928, and ends June 11, 1929.

OKLAHOMA

Students intending to practice medicine in Oklahoma, in addition to a four-year high school education, must complete two years of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language, prior to beginning the study of medicine.

Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE.—Organized in 1900. Gave only the first two years of the medical course at Norman until 1910, when a clinical department was established at Oklahoma City. Beginning September 1928, entire course is given at Oklahoma City. The first class graduated in 1911. Co-educational since organization. It has a faculty of 54 professors and 36 lecturers, assistants, etc., a total of 90. Two years of college work are required for admission. The course is four years of nine months each. An optional course of six years is offered for the degrees of B.S. and M.D. The total fees for the four years are, respectively, $113, $93.50, $21 and $21. For students residing outside the State of Oklahoma there is a tuition fee of $200 per year. The Dean is Dr. LeRoy Long, School of Medicine Building, 13th and Phillips Street, Oklahoma City, Okla. The total registration for 1927-1928 was 188; graduates, 41. The twenty-ninth session begins Sept. 17, 1928, and ends June 4, 1929.

OREGON

Students who desire to practice in Oregon must complete two years of college work before entering on the study of medicine.

Portland

UNIVERSITY OF OREGON MEDICAL SCHOOL, Marquam Hill.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Co-educational since organization. It has a faculty of 65 professors and 115 lecturers, assistants, etc., a total of 180. Entrance requirements are three years of college work or its equivalent. The course is four years of thirty-four weeks each. The total fees for the four years are, respectively, $200, $195, $190 and $190 for residents of Oregon, and $60 per year additional for nonresidents. The Dean is Dr. Richard B. Dillehunt. The total registration for 1927-1928 was 226; graduates, 47. The forty-second session begins Oct. 3, 1928, and ends June 8, 1929.

PENNSYLVANIA

Students intending to practice medicine in Pennsylvania, in addition to a four-year high school education, must complete a year's work in an approved college of liberal arts, including college courses in physics, chemistry and biology, before beginning the study of medicine. They must also have completed an internship of at least one year in an approved hospital.

Philadelphia

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-Sixth Street and Hamilton Walk.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title, School of Medicine of the University of Pennsylvania, was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Co-educational since 1914. The faculty consists of 69 professors, associate and assistant professors, and 201 lecturers, associates, instructors, etc., a total of 270. Three years of college work are required for admission, including courses in physics, biology or zoology, chemistry, including general inorganic, organic and analytical, English and French or German. The first class is limited to 110 students; third and fourth to 135 each. The course embraces four years of study of thirty-three weeks each. The total fees are $400 each year, with a deposit fee of $15 and a matriculation fee of $5. The Dean is Dr. William Pepper. Total registration for 1927-1928 was 483; graduates, 136. The one hundred and sixty-third session begins Sept. 28, 1928, and ends June 19, 1929.

JEFFERSON MEDICAL COLLEGE, 1001 Walnut Street.—Organized in 1825 with its present title as the Medical Department of Jefferson College, Cannonsburg, Pa. Classes have been graduated annually since 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a faculty of 53 professors, associate and assistant professors, and 148 associates, lecturers, demonstrators and instructors, a total of 201. Entrance requirements are a completed standard four-year high school or college preparatory course, or the equivalent, and in addition two years of work leading to a degree in an approved college of arts and science amounting to at least 60 semester hours, including specified courses in physics, general and organic chemistry and biology, with laboratory work in each subject. The course of study covers four years of eight and a half months each. The total fees for the four years are, respectively, $440, $430, $425 and $425. The Dean is Dr. Ross V. Patterson. The total registration for 1927-1928 was 589; graduates, 144. The one hundred and fourth session begins Sept. 24, 1928, and ends June 7, 1929.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, 2101 North College Avenue.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 29 professors and 53 assistants, lecturers, etc., in all, 82. Entrance requirements are a completed course in a standard secondary school, and in addition two years of collegiate work, including courses in physics, chemistry, biology and French or German. The curriculum covers four years of eight months each. Fees for each of the four years are, respectively, $300, $300, $300 and $275. The Dean is Dr. Martha Tracy. The total registration for 1927-1928 was 90; graduates, 11. The seventy-ninth session begins Sept. 26, 1928, and ends June 12, 1929.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 216 North Broad Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Entrance requirements are a completed course in a standard secondary school and in addition two years devoted to a college course, including English and either French, German or Spanish, physics, chemistry and biology. It has a faculty of 56 professors and 74 lecturers, instructors, etc., in all, 130. The work covers four years of eight and a half months each. Fees for each of the four years are, respectively, $355, $352, $352 and $375. The Dean is Dr. William A. Pearson. The total registration for the college year 1927-1928 was 339; graduates, 62. The eighty-first session begins Oct. 1, 1928, and ends June 6, 1929.

THE TEMPLE UNIVERSITY SCHOOL OF MEDICINE, Eighteenth and Buttonwood Streets.—Organized in 1901. The first class graduated in 1904. Co-educational since organization. The faculty numbers 20 professors and 127 associates, assistants, etc., a total of 147. Two years of college work are required for admission. The fees for each of the four years, respectively, are $415, $390, $390 and $390. The Dean is Dr. Frank C. Hammond. The total registration for 1927-1928 was 214; graduates, 49. The twenty-eighth session begins Sept. 19, 1928, and ends June 13, 1929.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Bigelow Boulevard.—Organized in 1886 as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pitts-

burgh, removing to the university campus in 1910. The first class graduated in 1887. Co-educational since 1899. The faculty is composed of 18 professors and 181 associates, assistants, etc., 199 in all. Entrance requirements are two years of college work, including English, chemistry (inorganic and organic), physics and biology. The course of study is four years of eight and a half months each. The total fees for the four years, respectively, are $415, $400, $400 and $410. The Dean is Dr. Raleigh R. Huggins. The total registration for 1927-1928 was 254; graduates, 57. The forty-third session begins Sept. 24, 1928, and ends June 12, 1929.

SOUTH CAROLINA

Students intending to practice medicine in South Carolina must complete, in addition to high school work, two years in an approved college, including courses in English, physics, chemistry and biology.

Charleston

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. Co-education from 1895 to 1912, when privileges for women were withdrawn, but they were restored in 1917. It has a faculty of 30 professors and 33 lecturers, instructors, etc., a total of 63. The course covers four years of eight months each. Two years of collegiate work including courses in physics, chemistry, biology and a modern foreign language are required for admission, in addition to a standard high school preparation. The total fees are $180 annually. The Dean is Dr. Robert Wilson. Total enrolment for 1927-1928 was 159; graduates, 41. The one-hundredth session begins Sept. 21, 1928, and ends June 6, 1929.

SOUTH DAKOTA

Students intending to practice medicine in South Dakota must show that they matriculated in and graduated from medical colleges which required at least two years of collegiate work for admission, including courses in physics, chemistry, biology and a modern language. They must also have completed a year's internship in an approved hospital.

Vermilion

UNIVERSITY OF SOUTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1907. Co-educational since organization. Offers only the first two years of the medical course. Two years' work in a college of liberal arts is required for admission. The fees are $100 each year for residents, $150 for non-residents. The faculty numbers 11. The Dean is Dr. George R. Albertson. The total registration for 1927-1928 was 46. The twenty-second session begins Sept. 17, 1928, and ends June 15, 1929.

TENNESSEE

Students intending to practice medicine in Tennessee must complete two years of collegiate work, including courses in physics, chemistry, biology and a reading knowledge of French or German, in addition to a four-year high school course, before entering on the study of medicine.

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, 879 Madison Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Co-educational since 1911. The faculty includes 64 professors and 97 assistants, instructors, etc., a total of 161. Entrance requirements are a high school education plus two years of collegiate work. Students taking the two-year premedical course in Knoxville may secure the B.S. and M.D. degrees. The total fees for the four years, respectively, are $172, $164.50, $149.50 and $167 for residents of the state, and $125 more each year for nonresidents. The administrative officer is Orren W. Hyman, Ph.D. Total registration for 1927-1928 was 342; graduates, 63. The next session begins Oct. 1, 1928, and ends June 15, 1929.

Nashville

VANDERBILT UNIVERSITY SCHOOL OF MEDICINE, Twenty-First and Edgehill.—This school was founded in 1874. The first class graduated in 1875. Co-educational since September, 1925. The faculty consists of 65 professors and 99 lecturers, a total of 164. Students must have successfully completed at least three years of college work with such grades as will entitle them to receive the Bachelor's degree after one year in the School of Medicine. The course covers four years of nearly nine months each. The total fees for the four years, respectively, are $315, $315, $315 and $320. The Dean is Dr. Waller S. Leathers. The total registration for 1927-1928 was 184; graduates, 47. The fifty-fifth session begins Sept. 25, 1928, and ends June 12, 1929.

MEHARRY MEDICAL COLLEGE. Colored. 1118 First Avenue, South.—This school was organized in 1876 as the Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Co-educational since 1876. The faculty is made up of 18 professors and 27 instructors, demonstrators, lecturers, etc., 45 in all. Two years' work in a college of liberal arts is required for admission. The work embraces four years of thirty-two weeks each. The total fees for the four years, respectively, are $208, $200, $200 and $210. The President is Dr. John J. Mullowney. Total registration for 1927-1928 was 211; graduates, 46. The fifty-third session begins Oct. 1, 1928, and ends May 23, 1929.

TEXAS

Students intending to practice medicine in Texas must complete at least two years of collegiate work, including courses in physics, chemistry, biology and English in addition to a high school course, before entering on the study of medicine.

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 810 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. Co-educational since 1900, the date of organization. The first class graduated in 1901. The faculty consists of 57 professors and 60 instructors and assistants, a total of 117. Entrance requirements are two years of college work in addition to a four-year high school education. The course is four years of eight months each. The fees for each of the four years, respectively, are $207, $292, $282 and $282. The Dean is Dr. Walter H. Moursund. Total registration for 1927-1928 was 349; graduates, 58. The twenty-ninth session begins Sept. 24, 1928, and ends May 27, 1929.

Galveston

UNIVERSITY OF TEXAS SCHOOL OF MEDICINE, 912 Avenue B.—Organized in 1891. The first class graduated in 1892. Co-educational since organization. It has a faculty of 23 professors and 32 lecturers and instructors, a total of 55. The curriculum embraces four years of eight months each. The entrance requirement is two years of collegiate work in addition to a four-year high school education. The freshman class is limited to 100 students on a scholarship basis, Texans having preference. The total fees for the four years, respectively, are $78, $78, $66 and $78 for residents of the state, and $150 additional each year for nonresidents. The Dean is Dr. George E. Bethel. Total registration for 1927-1928 was 249; graduates, 43. The thirty-eighth session begins Oct. 1, 1928, and ends May 31, 1929.

UTAH

Students intending to practice medicine in Utah, in addition to a four-year high school education, must complete at least two years of collegiate work, including courses in physics, chemistry and biology, prior to beginning the study of medicine. In addition to the course in medicine they must complete a year's internship in a hospital.

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE.—Organized in 1906. Co-educational since organization. Gives only first two years of medical course. Each course covers thirty-six weeks. Three years of collegiate work are required for admission. The medical faculty consists of 6 professors and 12 lecturers and assistants, a total of 18. The fees are $150 each year. The Dean is Dr. Ralph O. Porter. Total registration for 1927-1928 was 57. The twenty-second session begins Sept. 25, 1928, and ends June 8, 1929.

VERMONT

Students who desire to practice medicine in Vermont, in addition to a standard four-year high school education, must complete two years of collegiate work, including college courses in physics, chemistry and biology, before entering on the study of medicine.

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Co-educational since 1920. It has a faculty of 29 professors and 23 lecturers, instructors, etc., a total of 52. Two years of college work in addition to a four-year high school education is required for admission. The course of study covers four years of nine months each. For residents of Vermont the total fees are $250 each year. Nonresidents are charged an additional $75 each year. The Dean is Dr. James N. Jenne. The total registration for 1927-1928 was 130; graduates, 29. The next session begins Sept. 21, 1928, and ends June 17, 1929.

VIRGINIA

Students desiring to practice in Virginia must be graduates of medical colleges which require for admission two years of collegiate work, including courses in physics, chemistry, biology

and a modern language, preferably German, in addition to a four-year high school education.

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Co-educational since the session 1920-1921. It has a faculty of 29 professors and 38 lecturers, instructors, assistants, etc., a total of 67. The requirements for admission are the completion of a four-year high school course, or its equivalent, and two years of college work devoted to English, mathematics, chemistry, physics and biology. For residents of Virginia the total fees for the four years, respectively, are $290, $290, $265 and $255. Nonresidents are charged an additional $20 each year. The Dean is Dr. James C. Flippin. The total registration for 1927-1928 was 248; graduates, 55. The one-hundredth session begins Sept. 13, 1928, and ends June 11, 1929.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Twelfth and Clay Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Co-educational since 1918. Classes were graduated in 1840 and in all subsequent years. It has a faculty of 49 professors and 92 lecturers, instructors, etc., a total of 141. The requirement for admission is a four-year high school education and in addition two years of collegiate work, including courses in physics, chemistry, biology and English. The course embraces four years of eight months each. Total fees for the four years, respectively, are $305, $305, $296 and $326. Nonresidents are charged an additional $50 each year. The Dean is Dr. Manfred Call. The total registration for 1927-1928 was 358; graduates, 92. The ninety-first session begins Sept. 11, 1928, and ends May 28, 1929.

WEST VIRGINIA

Students who desire to practice medicine in West Virginia must complete, in addition to a high school education, two years of collegiate work, including courses in physics, chemistry and biology, and German or French, before entering on the study of medicine.

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, and gives only the first two years of the medical course. Co-educational since organization. Two years of college work is required for admission, and the Bachelor's degree will be granted to those who finish the two years in medicine. Session extends through nine months. The faculty numbers 20. Fees: For residents of the state, $115 each year; for nonresidents, $365. The Dean is Dr. John N. Simpson. The total registration for 1927-1928 was 108. The next session begins Sept. 17, 1928, and ends June 4, 1929.

WISCONSIN

Students intending to practice medicine in Wisconsin, prior to entering a medical school, must complete, besides a four-year high school course, two years of collegiate work, including courses in physics, chemistry, biology and German or French. In addition to their four-year course in medicine they must complete also a year's internship in a hospital.

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL, 412 North Charter Street.—Organized in 1907. Co-educational since organization. For matriculation at least two years in a college of arts and science or an equivalent training are required, including two years of Latin, a reading knowledge of French or German, and at least a year's work in physics, chemistry and biology. It has a faculty of 53 professors, 96 preceptors and 67 lecturers, instructors, etc., a total of 216. Tuition fees: $125 per year for nonresidents of Wisconsin. Incidental and laboratory fees for both resident and nonresident students average about $100 per year. The Dean is Dr. Charles R. Bardeen. The registration for 1927-1928 was 257; graduates, 25. The twenty-first session begins Sept. 26, 1928, and ends June 18, 1929.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, 638 Fourth Street.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Co-educational since organization. It has a faculty of 144. The entrance requirements are two years of college work, including courses in physics, chemistry, biology and a modern foreign language. The curriculum covers four years of eight and a half months each, and one year's internship in an approved hospital. The fees for the four years, respectively, are, $313, $303, $303 and $283. The Registrar is Mrs. Mary L. Melzer. The registration for 1927-1928 was 346; graduates, 61. The seventeenth session begins Sept. 24, 1928, and ends June 12, 1929.

PHILIPPINE ISLANDS

Manila

UNIVERSITY OF THE PHILIPPINES COLLEGE OF MEDICINE, 547 Herran Street, Ermita, Manila.—Organized in 1907 as the Philippine Medical School, under the support of the government of the Philippine Islands. In 1910 the title was changed to University of the Philippines College of Medicine and Surgery. The faculty includes 46 professors and 48 lecturers, assistants, etc., a total of 94. A two-year collegiate course, French or German, is required for admission. The course extends over five years. In the fifth year the students serve as interns in the Philippine General Hospital. The fees for the four years, respectively, are $74.25, $56.75, $36.75 and $41.75. The Dean is Dr. Fernando Calderon. The total registration for 1927-1928 was 282; graduates, 28. The twenty-second session began about June 11, 1928, and ends about March 29, 1929.

UNIVERSITY OF ST. THOMAS COLLEGE OF MEDICINE AND SURGERY, Manila.—University founded by papal decree in 1587. Medical department added in 1871. The faculty includes 29 professors and 20 assistants, instructors, etc., a total of 49. A two-year collegiate course is required for admission. The course of study is five years, including an internship in a hospital. The registration for 1927-1928 was 701; graduates, 64. The Dean is Dr. Jose L. de Castro.

CANADA

The Dominion of Canada has nine medical colleges, all of which require a six-year course, including courses in physics, chemistry and biology. This course is equal to that in the medical schools of the United States which require two years of college work for admission, including the science courses named.

Alberta

UNIVERSITY OF ALBERTA FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Co-educational since organization. Has given the complete six-year medical course since 1924. The faculty includes 37 professors and 39 instructors, assistants, etc., a total of 76. Fees for each year are $207. The Dean is Dr. Allan C. Rankin. The registration for 1927-1928 was 145; graduates, 18. The sixteenth session begins Sept. 26, 1928, and ends May 15, 1929.

Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE, Corner of Emily and Bannatyne, Winnipeg.—Organized in 1883 as Manitoba Medical College; first class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Co-educational since organization. The faculty includes 51 professors and 94 instructors, assistants, a total of 145. The total fees for the five years, respectively, are $205, $200, $210, $210 and $70. Matriculation requirements include two years of college work in the faculty of Arts and Science of a recognized university subsequent to the complete high school course required for entrance to the latter. The course extends over five years of eight months each. The Dean is Dr. S. Willis Prowse. Total registration for 1927-1928 was 267; graduates, 49. The next session begins Oct. 1, 1928, and ends May 26, 1929.

Nova Scotia

DALHOUSIE UNIVERSITY, FACULTY OF MEDICINE, Halifax, N. S.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the University. By an arrangement between Dalhousie University and the Provincial Medical Board of Nova Scotia, the final professional examinations are conducted conjointly by the university and the board, and candidates may qualify at the same time for their academic degrees and the provincial license. First class graduated in 1872. Co-educational since 1871. It has a faculty of 30 professors and 38 lecturers and demonstrators, a total of 68. Requires for matriculation two years of Arts and a graded course of five years. The fees are $225 each year. The total registration for 1927-1928 was 136; graduates, 26. The Dean is Dr. John Stewart. The next session begins Sept. 11, 1928, and ends May 14, 1929.

Ontario

UNIVERSITY OF TORONTO FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 absorbed Trinity Medical College. Co-educational since 1903. The course of study covers six years of eight months each, the first two being devoted largely to physics, chemistry, biology and cultural courses in history, science and English. It has a faculty of 65 professors and 204 lecturers, associates, etc., a total of 269. The fees are $171 for the first year; for the second to the fifth year, $221, and $244 for the sixth year. The Dean is Dr. Alexander Primrose. The total registration for 1927-1928 was 731; graduates, 104. The next session begins Sept. 25, 1928, and ends May 25, 1929.

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty was originally a department of the university, but a separation took place in 1866, when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. In 1892 the school again became a part of Queen's University. The faculty numbers 54. The fees for the six years are, respectively, $168, $176, $176, $201, $201 and $231. The last includes the fee of $30 for the M.D., C.M. degrees. The course covers six years of thirty teaching weeks each, the first including courses in physics, chemistry, biology, history or economics or English. The total registration in 1927-1928 was 323; graduates, 58. The Dean is Dr. J. C. Connell. The next session begins Sept. 26, 1928, and ends May 29, 1929.

UNIVERSITY OF WESTERN ONTARIO MEDICAL SCHOOL, London, Antario.—Organized in 1881 as the Western University Faculty of Medicine; first class graduated in 1883, and a class graduated each subsequent

year. Present title in 1923. The medical school has been under the control of the Board of Governors of the University of Western Ontario since 1913. Co-educational since 1913. The faculty numbers 75. Two years of premedical college work, including courses in physics, chemistry and biology, is required for admission to a four year medical course—all of which is referred to as a six year medical course. The total fees for the last four years, respectively, are $175, $175, $183 and $208. The Dean is Dr. A. B. Macallum. Total registration for 1927-1928 was 136; graduates, 30. The next session begins Sept. 25, 1928, and ends May 31, 1929.

Montreal

McGILL UNIVERSITY, FACULTY OF MEDICINE, 3640 University Street, Montreal.—Founded 1824 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839 owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. Co-educational since 1919. The course consists of two premedical years, four medical years of eight months each, and a fifth year of hospital intern work. The faculty consists of 58 professors and 135 lecturers, etc., a total of 193. The total fees for each of the five medical years are $277. The total registration for 1927-1928 was 457; graduates, 90. The Dean is Dr. C. F. Martin. The next session begins Sept. 19, 1928, and ends May 8, 1929.

UNIVERSITY OF MONTREAL FACULTY OF MEDICINE, 1265 St. Denis Street, Montreal.—Organization in 1843, incorporated in 1845 as the Montreal School of Medicine and Surgery. In 1891, by act of Parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name, by act of Parliament, in 1920. A class was graduated in 1843 and in each subsequent year. One woman student admitted in the fall of 1925. The faculty numbers 96. The course extends over six years, including preliminary courses in physics, chemistry and biology. The total fees for each of the six years, respectively, are $225, $207, $243.80, $221, $227. The Dean is Louis de Lotbieniere Harwood. The Vice-Dean and director of studies is Telesphore Parizeau. The total registration for 1927-1928 was 259; graduates, 38. The next session begins Sept. 15, 1928, and ends June 15, 1929.

Quebec

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Medical Department of Laval University; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 58. The fees are $160 each year. The course extends over six years, including preliminary courses in physics, chemistry and biology. The Dean is Dr. Arthur Rousseau, Quebec. Total registration for 1926-1927 was 221; graduates, 31.

HOSPITAL INTERN YEAR

Required by Medical Colleges

Eleven medical colleges have adopted the requirements of a fifth year to be spent by the student as an intern in an approved hospital or in other acceptable clinical work before the M.D. degree will be granted. These colleges and the years when the requirement became effective for matriculants and graduates are as follows:

	Affects Matriculants	Affects Graduates
University of Minnesota Medical School	1910-11	1915
Stanford University School of Medicine	1914-15	1919
Rush Medical College (University of Chicago)	1914-15	1919
University of California Medical School	1914-15	1919
Marquette University School of Medicine	1915-16	1920
Northwestern University Medical School	1915-16	1920
University of Illinois College of Medicine	1917-18	1922
Loyola University School of Medicine	1917-18	1922
Detroit College of Medicine and Surgery	1919-20	1924
University of Cincinnati College of Medicine	1922-23	1926
College of Medical Evangelists	1922-23	1927

Required by Licensing Boards

The hospital intern year has been adopted as an essential qualification for the license to practice in thirteen states, becoming effective in different years, as follows:

State Board of	Affects Student Matriculants	Affects All Applicants
Pennsylvania	1909-10	1914
New Jersey	1911-12	1916
Alaska	1912-13	1917
Rhode Island	1913-14	1918
North Dakota	1913-14	1918
Washington	1914-15	1919
Illinois	1918-19	1923
Michigan	1917-18	1922
Delaware	1919-20	1924
South Dakota	1920-21	1925
Utah	1921-22	1926
Iowa	1922-23	1927
Wisconsin	1922-23	1927

The requirements both by medical schools and by state boards are overwhelming if not unanimously for the rotation service in general hospitals.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

The requirements for admission to and graduation from colleges holding membership in this association are 15 units of high school work and two years (60 semester hours) of college work.

CURRICULUM: The entire course of four years shall consist of not less than 3,600 hours, and shall be grouped in divisions and subdivided into subjects, each division to be allotted approximately the time, on a percentage basis, as shown in the following schedule:

1. Anatomy, including embryology and histology	14	–18½%
2. Physiology	4½– 6	%
3. Biochemistry	3½– 4½	%
4. Pathology, bacteriology and immunology	10 –13	%
5. Pharmacology	4 – 5	%
6. Hygiene and sanitation	3 – 4	%
7. General medicine (neurology and psychiatry, pediatrics, dermatology and syphilis)	20	–26½%
8. General surgery (orthopedic surgery, urology, ophthalmology, otolaryngology, roentgenology)	13	–17½%
9. Obstetrics and gynecology	4 – 5	%
	76	– 100%
Electives	24	– 0 %

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Navy Medical School.
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University of Oregon Medical School.
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Jefferson Medical College.
University of Pennsylvania Graduate School of Medicine.
University of Pennsylvania School of Medicine.
University of Pittsburgh School of Medicine.
Woman's Medical College of Pennsylvania.
University of the Philippines College of Medicine and Surgery.
Medical College of the State of South Carolina.
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The secretary-treasurer of the Association is Dr. Fred C. Zapffe, 25 East Washington Street, Chicago.

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SATURDAY, AUGUST 18, 1928

MEDICAL EDUCATION IN THE UNITED STATES

For twenty-eight years THE JOURNAL has published annual reports on medical education in the United States. The data published this week present a decided and encouraging contrast with the conditions reported in 1901.

MEDICAL STUDENTS

The number of medical students this year was 20,545, an increase over the previous year—an increase which has persisted since 1919, when the enrolments of students reached the lowest ebb—12,930—as a result of the reorganization of medical schools. Mergers of medical schools were urged whereby an oversupply in numbers might give place to a smaller number of better equipped institutions. The entrance requirements also were increased to include two years of college work in order that medical education in this country might be on a par with that of the leading nations abroad. The reduction in the numbers of students resulting from these changes was not as great as was expected. The subsequent increase in the enrolments is of students who have not only met the higher entrance qualifications but also, for the most part, voluntarily obtained baccalaureate degrees prior to or during their medical course.

STUDENTS FAILING TO GRADUATE

Statistics published this week show that, of the students enrolled during the nineteen years from 1907 to 1926 inclusive, 83 per cent obtained their medical degrees and only 17 per cent failed to graduate. It is interesting also to know that 90 per cent of those who did not graduate dropped out, voluntarily or otherwise, during the first two years of the medical course.

MEDICAL GRADUATES

The number of students who graduated in 1928 was 4,262, as compared with 2,529, the lowest number in the decline, who graduated in 1922. In six years, therefore, a rapid increase in the numbers of graduates has fully offset the decrease of the eleven years prior to 1922 and, at the same time, 96 per cent are from class A medical schools, as compared with less than 60 per cent in 1911. With the closer relations with hospitals and outpatient departments, the use in clinical instruction of section clinics and clinical clerkships, and the use of autopsies and clinical-pathologic conferences, these graduates have obtained a clinical training far surpassing that of twenty years ago. More than 90 per cent of all graduates now obtain internships in approved hospitals. Before beginning practice, therefore, a graduate in medicine has spent three years in the examination and care of patients and has seen more patients than many see in ten years of private practice. Twenty-five years ago in their undergraduate instruction students obtained little experience in examining patients, and most of them did not receive hospital intern training.

MEDICAL SCHOOLS

Since 1922 the number of medical schools in the United States has fluctuated between seventy-eight and eighty. The two Missouri institutions whose charters were revoked are still issuing degrees under new charters and names.[1] With the gradual strengthening of the methods of licensure, however, it is believed that the end of low grade medical schools is not very far away. There are now seventy-two medical schools in class A, with the admission of Temple University School of Medicine to that class. Two medical schools remain in class B and six in class C. The University of Southern California has declared its intention of reopening the medical school this fall, and next year the new medical school of Duke University will be opened. Some of the state university medical schools now offering two years of the medical course are also planning to teach the clinical years. During recent years the tendency in medical schools has been to concentrate teaching in new and enlarged plants whereby the laboratories will be in closer contact with clinical teaching. Through these larger plants, coupled with more teachers, more laboratory equipment and more abundant clinical material, the eighty medical schools have been enabled during the last six years to increase their total enrolment from 14,000 to more than 20,000 students. It is believed that they will maintain an ample capacity to care for all properly qualified students who apply for admission.[2]

GRADUATE MEDICAL EDUCATION

Statistics dealing with graduate medical education which are published this week permit a comparison with the statistics published five years ago.[3] In 1922 there were 3,556 graduate students made up of 2,915 students in twenty-five unsupervised postgraduate schools and polyclinics and 641 residents in 285 unsu-

1. The Kansas City College of Medicine and Surgery was replaced by the American Medical University; the St. Louis College of Physicians and Surgeons, by the Missouri College of Medicine and Science.

2. See Multiple Applications for Admission to Medical Schools, Current Comment, this issue, p. 502.

3. Proceedings, Annual Congress on Medical Education, Licensure and Hospitals, March 5-7, 1923, pp. 1-6.

pervised hospitals. In 1927 there were 3,472 graduate students, including 2,336 students in forty-one approved graduate medical schools and 1,136 residents in 272 approved hospitals. Students enrolled in unapproved institutions in 1927 have not been included in the statement. It is interesting to note that, in 1922, of all the graduate students, 2,045, or 53.7 per cent, had been in practice five or more years, while in 1927, of the graduate students 1,724, or 49.7 per cent, had been in practice for five or more years.

Most encouraging is the increase of graduate medical teaching in this country. Of the forty-one graduate medical schools approved by the Council on Medical Education and Hospitals, two are well organized university graduate schools of medicine; graduate medical teaching is emphasized in two other universities, and graduate courses are being given in twenty-three university undergraduate medical schools, including ten connected with state universities. There are five hospitals giving graduate instruction other than the instruction given to residents. There are two graduate schools not connected with universities; and five other institutions which are not connected with either universities or hospitals give instruction in specialties.

Universities having both undergraduate and graduate schools of medicine are in position properly to distribute the subjects which belong, respectively, in the graduate or undergraduate school and to establish thereby a better arranged medical curriculum. Doubtless great progress will be made in the next several years in graduate medical education.

"DENICOTINIZED" TOBACCO

Mankind has traditionally included in the daily regimen a variety of substances that do not function as true nutrients. Some of them are so unlike the natural foods that they can scarcely be regarded as adventitious contaminants of the ration. Certain beverages, such as coffee, tea and cocoa, are concocted in an admittedly artificial manner. They are characterized by a well defined content of methylated purine derivatives, notably caffeine, theobromine and theophylline, which exhibit recognized physiologic actions. Similarly, fermented beverages and distilled liquors have a common potent constituent, alcohol, that can function as a drug as well as a food. Under certain conditions the pharmacologic potencies of such inclusions in the dietary may become objectionable. Accordingly, efforts have been made, particularly in recent years, to eliminate some of the undesired ingredients while retaining the other characteristic features of the popular beverages. Alcohol-free drinks and decaffeinized coffees have thus become familiar articles of commerce.

Tobacco cannot be classed as a food in any sense; nevertheless there are certain analogies between the use of the "weed" and that of coffee and tea. Its use involves the introduction of a very potent alkaloid, nicotine, which many smokers cannot tolerate with impunity. This is not the occasion for debating whether nicotine represents the sole menacing ingredient of tobacco or tobacco smoke. The latter includes a considerable list of chemical compounds, such as carbon monoxide, volatile sulphide, methyl alcohol and hydrocyanic acid, reputed to be menacingly noxious when absorbed in sufficient quantities. Though free nicotine is readily volatilized by heat, it has often been stated that the burning of tobacco when it is smoked serves to destroy much of the alkaloid and thus decrease its possible physiologic effects. Furthermore, the products of partial combustion have been given a reputation of lessened toxicity.

In any event, however, the removal of the objectionable nicotine from the tobacco leaf has been an ardently desired accomplishment on the part of many inveterate smokers. So-called denicotinized tobaccos and tobacco products for which reduced nicotine content is claimed or implied by label declaration are now being offered for sale. They have been hailed with delight by many persons who dislike, as most smokers do, to give up tobacco but may be advised to curtail their smoking. Physicians who are obliged to advise such restrictions or to enforce them in patients have been particularly concerned with the new products. Some of the latter actually proclaim such statements as "absolutely harmless" or "can be safely smoked by those who otherwise could not smoke." In fairness it should be added, however, that most of the now available brands limit their printed claims to "special treatment for the reduction of nicotine" or to having the "bulk of the nicotine" removed.

Illuminating information regarding the alleged denicotinized tobaccos has just been furnished by the experts of the Connecticut Agricultural Experiment Station in New Haven.[1] The usual method by which denicotinized tobaccos are prepared is essentially a resweating process accomplished by treatment with superheated steam or by heating in vacuum chambers. Conceivably, suitable solvents may be used, or diluents in the form of nicotine-free leaves foreign to tobacco might be added as an adulterant. Comparisons of processed tobaccos are not easy, because the nicotine content varies so widely in the leaf from different sources. Thus, fairly representative nicotine values are 2.5 to 3.5 per cent for Virginia tobacco, 2.0 to 3.0 per cent for various other domestic leaf, 1.1 to 2.4 per cent for Havana, and 1.0 to 1.5 for Turkish.

According to the Connecticut analyses of nearly a score of samples, the "denicotinized" products vary considerably in nicotine content, as do ordinary tobaccos. As a group they were found to contain somewhat less nicotine than tobacco not specially processed. Some "denicotinized" products on sale con-

1. Bailey, E. M.; Nolan, O. L., and Mathis, W. T.: "Denicotinized" Tobacco, Bull. 295, Connecticut Agricultural Experiment Station, May, 1928, p. 338. A copy of this report is available on request to the station.

tained as much nicotine as is likely to be found in ordinary tobaccos; a few contained substantially less. The lowest nicotine content found in any sample was about 0.75 per cent. The lowest reported value for ordinary tobacco is about 0.50 per cent, but this is probably unusual. Nevertheless certain types of tobacco may contain normally as little as 1 per cent of nicotine. Obviously, none of the "denicotinized" tobaccos examined are sufficiently poor in nicotine to warrant unrestricted indulgence on the part of consumers who suffer ill effects from this alkaloid. Bailey and his collaborators believe that it may be commercially possible to make the removal of nicotine from tobacco practically complete; but whether the finished product will retain any of the qualities for which tobacco is prized for smoking purposes is an obvious question.

The disclosures in the Connecticut report carry a salutary warning. Granting the deleterious effects of nicotine, its authors state, this substance is not the only constituent of tobacco reputed to be deleterious to health; but it is, on the other hand, generally regarded as an important, if not the chief, factor contributing to the satisfying effects that are derived from smoking. It seems reasonable, they add, to anticipate that the consumer having recourse to denicotinized tobacco as a means of reducing his customary nicotine ration will consume more of such tobacco, partly because he believes it to be largely or entirely freed from its objectionable nicotine and partly also, if the tobacco is greatly reduced in nicotine, in an unconscious effort to secure the satisfying effects which he is accustomed to derive. Consequently, by reason of his increased indulgence, his actual nicotine intake may equal or exceed his usual consumption.

Current Comment

MULTIPLE APPLICATIONS FOR ADMISSION TO MEDICAL SCHOOLS

Reports that great numbers of students are being turned away from medical schools, while true in a sense, greatly exaggerate the situation. An investigation, two years ago,[1] showed that 8,500 individual students made in all 20,093 applications, or an average of about 2½ applications per student. In a second report showing the applications for the last session, 11,282 individual applicants made 23,590 applications at about the same average as the year before. In the fall of 1926, 6,420 applications were accepted but of these there were only 5,020 actual enrolments, indicating that 1,400 students had been accepted in two or more schools. Thus, at the beginning of the session in the fall of 1926, vacancies still existed to the extent of one fourth of the entire enrolment. Fortunately, some of the schools had waiting lists whereby many of these vacancies were filled. Authentic reports show that, in the fall of 1926, 6,009 students were admitted to the first year class. Of the 6,397 applications rejected in the fall of 1926, 2,622 individuals were rejected because of unsatisfactory qualifications. Of these, according to later investigations, 1,340 reapplied in the fall of 1927 and 750 were accepted, many of whom had secured additional preliminary qualifications. It is interesting to note that of the 750 whose credentials were reinvestigated on the second trial in 1927 and were accepted, only thirty-two had applied in 1926 to as many as from five to eleven different schools, while forty-three others who had applied in 1926 to five or more colleges and whose qualifications were reexamined in 1927 were again refused. In brief, the sifting processes during these two years resulted in the admission of the better element and the rejection of students less well qualified. The statistics published this week indicate that, as the numbers of properly qualified students seeking admission to medical schools increase, the medical schools are also gradually adding to their teaching staffs, equipment or clinical facilities whereby larger numbers of students are being enrolled.

1. Myers, B. D.: Bulletin A. A. M. C. **2**: 97 (April) 1927; **3**: 193 (July) 1928.

INFANT MORTALITY RATE FOR 1927

The infant mortality rate for 1927, as determined by the Child Health Association, was 64.9 among each thousand babies born, the lowest that has been recorded since the birth registration area was formed in 1915. The lowest previous rate was 72.2 in 1924, 7.3 points higher than the 1927 rate. The 1926 rate was 73.7. In computing the 1927 rate, statistics were used from 716 cities, 683 of which were in the birth registration area embracing forty states and the District of Columbia. These cities were listed in five groups, ranging in population from 10,000 to 250,000 and over. Seattle, representing the high population group, had the lowest infant death rate of 41, and Summit, N. J., representing the low population group, had the lowest infant death rate of 15. The cities of group I had a combined rate of 63.1, while those in group V had a combined rate of 68.2. Coincident with the low national rate, the ten largest cities of the country, with the exception of Los Angeles, had a lower rate for 1927 than for 1926, the most marked decline being in St. Louis and Cleveland, with rates lowered by 18 and 16 points, respectively. North Dakota had the lowest urban rate, however, with 46, and Arizona had the highest with 115; while the largest reductions in the urban infant death rates in individual states were in Louisiana, with a decline from 113 to 89, Tennessee with a decline from 108 to 86, Kentucky with a decline from 93 to 71, and North Carolina with a decline from 69 to 46. Such reductions are more noteworthy when it is remembered that there has been considerable poliomyelitis. For the first time since infant mortality reports have been issued, every city in the birth registration area is represented in the 1927 returns. This is quite a contrast to the returns from only twenty-four cities in 1912, when the first such report was compiled by the New York Milk Committee, and to the ten states and the District of Columbia (number of cities not available) in 1915, when the area was formed. The area now consisting of the District of

Columbia and all states except Nevada, Colorado, South Dakota, New Mexico and Texas comprises 87.3 per cent of the entire population of the United States. It has steadily increased in size since its formation, and a particular effort is now being made to have it include the entire country by 1930. If, when this is done, the death registration area is likewise increased, an official national infant mortality rate can then be computed yearly.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Fatal Case of Bubonic Plague.—A case of bubonic plague was reported at Camp Del Monte. According to the U. S. Public Health Service, the patient died at the hospital of the Presidio of Monterey, July 27.

Personal.—Herbert Hoover has been awarded the 1927 Major Surgeon Louis Livingston Seaman Medal by the American Museum of Safety, which is "for the best record in the saving of life in the field of sanitation and accidents." According to *Science*, Mr. Hoover received the medal in recognition of his public service from the standpoint of human values and particularly for his conspicuous work in the Mississippi flood relief.

Illegal Practitioner Sentenced.—"Dr." Howard A. Kelly, 272 North Marengo Ave., Pasadena, was sentenced to ninety days in the county jail, August 6, following his arrest on a charge of practicing medicine without a license. Kelly is said to have told his patients that he studied medicine at a well known medical center, but he thought it was in New York instead of Minnesota. He later admitted, however, that his studies were limited to intervals between meals in Pasadena, where he was employed as a dishwasher.

More Plague Infected Squirrels.—The director of the state department of health of California reported to the U. S. Public Health Service, July 11, that plague infection had been found by animal inoculation in two lots of ground squirrels from Monterey County, one from a ranch 12 miles east of Bradley and one from a ranch 11 miles east of Bradley. July 17, two other lots of ground squirrels were found infected, one from a ranch 2½ miles west of Santa Margarita in San Luis Obispo County, and one from a ranch 6 miles north of Cayucos in the same county.

CONNECTICUT

Personal.—Dr. John H. Mountain has been appointed health officer of Middletown to succeed the late Dr. Thomas P. Walsh. ——Dr. Kathryn M. E. Bryan has resigned as health officer of Preston.——Dr. Henry P. Talbot, who was formerly with the U. S. Public Health Service, at Ellis Island, New York, has been appointed chief of the division of venereal disease of the Connecticut State Department of Health.

Street Showers for Children.—New Haven has instituted fire hydrant showers in the streets in the vicinity of engine houses to help the youngsters keep cool and to improve their health. There is no doubt in the minds of the sponsors that they have been helpful in keeping disease to a minimum never before reached during the summer. New Haven installed its first fire hydrant shower in 1924; almost immediately after the ceremony of installation, more than 100 boys and girls put the apparatus into use. Now the city has twelve fire hydrant showers, and in July and August of last year thousands of children used them.

ILLINOIS

Councilor District Picnic at Petersburg.—A picnic will be held at the Old Salem Chautauqua grounds, Petersburg, September 12, a special feature of which will be an address on surgery by Dr. George W. Crile, Cleveland, and an address on medicine by Dr. John Phillips of Cleveland. All members of the Illinois State Medical Society and their friends are invited. "Come spend the day and visit the former home of Abraham Lincoln." Dinner will be served by a Springfield caterer regardless of weather, as there is a large pavilion. Send reservations to Dr. John R. Neal, Springfield, chairman, committee of arrangements.

Sanitation at County Fairs.—The first sanitary inspection of the Illinois fair grounds was made by the state department of health in 1926 in cooperation with the department of agriculture. It was found that only a few of them had sanitary toilets and safe water supplies. Accordingly, standards for these facilities were set and a report of conditions found was made to each fair association. At a similar inspection made in 1927, the source of the water was found to be "only city water" at thirty fairs; "city water and wells" at twenty-one fairs; "only wells" at twenty-two fairs," and "only cisterns" at one fair. There were commercial waterflushed toilets at twenty-one fairs, periodically flushed concrete trench toilets at six fairs, and chemical toilets at one fair. There were privies at sixty-one fairs and privies approved at eleven fairs. The health department has tabulated the results of the last sanitary inspection of county fairs, so that it is easy to determine the source of the water and the kind of toilet facilities at any fair in the state. The fair grounds approved in 1927 by the health department are indicated in heavy black type.

Chicago

Personal.—Dr. Francis L. Lederer has been appointed assistant professor of laryngology, rhinology and otology at the University of Illinois College of Medicine on half time.——Edwin O. Jordan, Ph.D., professor of bacteriology and chairman, department of hygiene and bacteriology, University of Chicago, has been appointed Cutter lecturer on preventive medicine at Harvard University for the year 1928-1929.——Dr. Otto L. Schmidt has resigned as a member of the school board of Chicago.—— The University of Wales recently awarded the honorary degree of LL.D. to Dr. Franklin H. Martin.

Report—Coroner's Physicians Mostly Incompetent.—A report issued by the Illinois Association of Criminal Justice in cooperation with the Chicago Crime Commission, August 11, indicates that, with one exception, the present staff of coroner's physicians in Cook County is incompetent to perform properly the important medicolegal duties which pertain to the office. The report states that not one of the physicians appointed by the present coroner has shown any tangible indication of being interested in any real sense in medicolegal work. No member of the staff of the present coroner holds a position as a hospital pathologist, and only one holds a teaching position in a medical school and that in the department of internal medicine. An examination of present records of the coroner's office disclosed, the report continues, not a single record of a thorough and complete necropsy performed according to accepted standard methods. The present records are considered practically worthless, therefore, in establishing the cause of death for any purpose and of doubtful value as the basis for evidence in criminal trials. The work of the only physician on the coroner's staff, who was appointed by a former coroner, was commended. The other members of the medical staff are so untrained for medicolegal work as to be in great contrast to the experienced pathologists who assisted the previous coroner, five of whom were engaged in teaching pathology in medical schools, and whose interest in medicolegal work was indicated by the fact that they published fourteen scientific papers on medicolegal subjects. Some of these skilled pathologists had been on the former coroner's staff for many years, but when the present coroner took office they were discharged or forced to resign. Experience indicates, the report says, that, in the hands of a competent, energetic and progressive coroner, the office of coroner with modernized modifications can meet fairly the needs of the population it serves. The essential requirement, however, is that the coroner's physicians be appointed on a professionally expert rather than on a political basis.

IOWA

Personal.—Dr. Emil C. Junger of Soldier is a candidate for the legislature.——Dr. Frank C. Titzell, Iowa City, is a candidate for congressman from the second district of Iowa.—— Dr. Helen Johnston, Des Moines, was recently elected national president of Altrusa, the original and largest body of women Rotarians.

Society News.—The Clayton County Medical Society was entertained, July 10, by the Fayette County Medical Society. The societies inspected the Mercy Hospital, Oelwein, at the invitation of Sister Visitation. Eighty-six of them attended the dinner later in the evening. In the afternoon the ladies were entertained at tea at the home of Mrs. Howard Risk. There was a ball game between the Fayette and Clayton county medical teams, and a boat ride on Lake Oelwein.——

Dr. Gordon B. New, Rochester, Minn., addressed the Johnson County Medical Society, July 11, on "Tumors of the Throat." ——A tuberculosis and heart clinic was held at Garner, July 27, under the auspices of the Hancock-Winnebago Counties Medical Society, at which the clinicians in the afternoon addressed the members on tuberculosis and heart disease, constituting one of the regular programs.

Dr. Woods to Head Department — Other Changes at Iowa.—Walter A. Jessup, LL.D., president of the University of Iowa, Iowa City, announced, August 1, that Dr. Andrew H. Woods has been appointed director of the psychopathic hospital and professor of psychiatry in the medical school. Dr. Woods is a graduate of the University of Pennsylvania School of Medicine, Philadelphia, in 1899, and has been on the faculty of the Peking Union Medical College in China. He will take up his work, January 1. Dr. Thomas P. Brennan has been in charge of this department since the resignation of Dr. Samuel T. Orton. Dr. Cyrus W. Rutherford has been appointed associate professor and acting head of the department of ophthalmology; Dr. Lee Foshay, director of student health and assistant professor of the theory and practice of medicine; Dr. C. S. Jordan, assistant professor of hygiene and public health, and Dr. P. M. Moore, instructor in otolaryngology. The following promotions on the medical faculty have been announced: Drs. Dean M. Lierle, to professor and acting head of otolaryngology; Julian D. Boyd, to assistant professor of pediatrics; Ralph L. Irwin, to assistant professor of anatomy; Anatole Kolodny, to assistant professor of surgery, and George H. Miller, to assistant professor of the theory and practice of medicine.

KENTUCKY

Health at Louisville.—Telegraphic reports to the U. S. Department of Commerce from sixty-eight cities with a total population of about 30 million, for the week ending July 28, indicate that the highest mortality rate (22.1) was for Louisville and that the mortality rate for the group of cities as a whole was 10.7. The mortality rate for Louisville for the corresponding week last year was 11.7, and for the group of cities, 10.5.

Meeting of Board of Health.—At the reorganization meeting of the Kentucky State Board of Health, Louisville, July 24, the directors of the sixteen bureaus of the state board were reelected. Certificates on the basis of the June examination were issued to 101 physicians, physical therapeutists, optometrists and one anesthetist. Dr. J. Watts Stovall, Grayson, was elected vice president of the board. The new members were Dr. L. T. Minish, Frankfort, and Dr. E. Murphy Howard, Jr., Harlan, who, as already noted in THE JOURNAL, was made president. The secretary, Dr. Arthur T. McCormack, Louisville, will hold over until 1930, it is reported, under a recent election. Dr. Howard will begin his term as president, Jan. 1, 1929; Dr. George S. Coon, Louisville, was selected to serve until that time, succeeding Dr. Joseph E. Wells, Cynthiana, the retiring president.

LOUISIANA

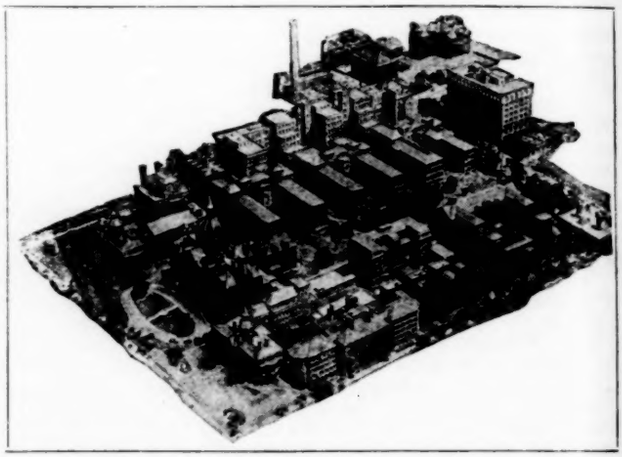
Personal.—Dr. Martin O. Miller, for four years house surgeon at the Charity Hospital, New Orleans, has resigned, and has been succeeded by Dr. William H. Cook; Dr. Philip H. Jones, senior resident medical officer, has resigned after two years' service and has been succeeded by Dr. Melville W. Hunter.

Society News.—The Sixth District Medical Society met, June 27, at Our Lady of the Lake Sanatorium, Baton Rouge. Drs. William Scheppegrell and Narcisse F. Thiberge, both of New Orleans, spoke on hay-fever and asthma. Dr. Thomas C. Paulson, Baton Rouge, was elected president for the ensuing year. Following the luncheon, served by the sanatorium, a women's auxiliary was formed.——The Third District Medical Society met at St. Martinsville, June 28; Dr. Henry W. E. Walther, New Orleans, read a paper on treatment of gonorrhea.

Changes in Hospital Superintendents.—After about twenty years' service as superintendent of the Central Louisiana Hospital for the Insane at Pineville, Dr. John N. Thomas tendered his resignation, effective, July 31, and was succeeded by Dr. Clarence Pierson of Alexandria.——Dr. G. M. Graham Stafford, Alexandria, resigned as superintendent of the state colony and training school, Camp Beauregard, July 31; Dr. Rutledge C. Tompkins of Minden will assume charge of the institution, October 1.——Governor Long has appointed Dr. Arthur Vidrine of Evangeline Parish superintendent of the Charity Hospital, New Orleans, to succeed Dr. William W. Leake. Dr. Leake has been the superintendent for several years.——Dr. John D. Spelman has resigned as superintendent of the Touro Infirmary, New Orleans.

MARYLAND

The Johns Hopkins Medical Center.—The Johns Hopkins Hospital, Baltimore, was incorporated in 1867 and opened in 1889; the medical school opened for the instruction of students in 1893. Instructors in the basic sciences devote their entire time to university duties. Since 1914, when the William H. Welch Fund for the Advancement of Clinical Teaching was established by the General Education Board, the responsible instructors in medicine, surgery, pediatrics and obstetrics have been on a similar basis, as have the departments of psychiatry and ophthalmology more recently. At the same time physicians engaged in practice are used as clinical teachers in the clinical departments. The hospital has a bed capacity of about 723 exclusive of bassinets. In the picture, received through the courtesy of the dean's office, the hospital administration building is in the center left with a dome and an oval driveway at the door. The series of similar buildings in the center and to the right of the administration building comprises the medical and surgical wards, the two farthest away being the women's clinic. The tall structure to the right of the women's clinic is the school of hygiene and public health. The three buildings in the background to the right of the smokestack are the Hunterian Laboratories and the anatomy and physiology buildings, in the last of which are the medical school offices. The large structures between the ward buildings and the smokestack are, on the right, the Pathology Laboratory, and, on the left, the dispensary and service building. The two chimneys beyond the hospital administration building are on the kitchen and, to its right, next to the dispensary and service building, is the Brady Urological Clinic. The line of buildings in the foreground comprise, in the center, the Harriet Lane Home for Invalid Children (with a roof like a very large E), and, to the right of it, the Henry Phipps Psychiatric Clinic. The Wilmer Ophthalmological Institute is between the corner building with the smaller pointed dome and the Harriet Lane Home for Invalid Children.



MASSACHUSETTS

Septic Sore Throat Wipes Out Family.—According to the Boston *Transcript*, all members of a household, consisting of the husband, wife and her sister, died at Hadley in July during the outbreak of septic sore throat.

Class Reunion.—The twenty-fifth anniversary of the class of 1903 of Harvard Medical School was celebrated at Boston, July 10-11. The first day was given over to demonstrations in departments of the school which were not in existence when the class graduated and to addresses by members of the class. Among those providing the program were Drs. William P. Murphy, Boston, on "Liver Diet in Pernicious Anemia"; Richard P. Strong, Boston, on "Tropical Medicine and the Last Expedition of the Department to Siberia"; Cecil K. Drinker, Boston, "Aims of the School of Public Health and the Laboratories of Industrial Medicine"; Fred H. Albee, New York, "Bone Grafts for Fractures of the Femoral Neck"; Simeon B. Wolbach, Boston, "Deficiency Diseases: Pathologic Features"; John Homans, Boston, "Varicose and Postphlebitic Ulcers"; Patrick F. Butler, Boston, "Roentgenologic Demonstration"; John B. Hawes, Boston, "Twenty-Five Years' Progress in Pulmonary Tuberculosis"; David W. Parker, Manchester, N. H., "Empyema in Children and Infants," and William R. MacAusland, Boston, "Mobilization of Ankylosed Joints." Luncheon was held in Vanderbilt Hall, the new medical dormi-

tory. The class put up at the Dedham Country and Polo Club the second day, where most of them played golf. Dinner was served for forty-two at the Norfolk Hunt Club in Medfield. The prize for the one coming the longest distance was awarded to Dr. George W. Clarke of Roseville, Ill., who had come from Los Angeles to attend the meeting.

MICHIGAN

County Society Aids in Clean-Up of Milk Supply.—Following some investigation of the milk supply of Grand Rapids by the state and local health departments, the Kent County Medical Society in February voted to make the milk problem its major health activity for the coming year and referred the subject to a committee. The committee diligently obtained information from other cities, it studied standard federal and state milk ordinances, and then the society offered the services of a committee to the city to assist in drafting a milk ordinance. The city formally accepted the offer and the medical committee worked in conjunction with a committee appointed by the Milk Dealers and Milk Producers Association in drafting the ordinance. The city commission carefully reviewed the situation and on August 6 adopted the milk ordinance. Among other requirements aimed to insure safe milk is that the pasteurization of milk must be done in plants within the city or not more than 2 miles outside its limits. The assistance of the Kent County Medical Society in this matter has been appreciated by the community generally.

Society News — Graduate Conferences. — The graduate conference conducted under the auspices of the state medical society at Lapeer, June 28, at the Michigan Home and Training School in the seventh district was devoted largely to a study of mental disease with a view of assisting the general practitioner. The graduate conference held, July 18, in the thirteenth district at Gaylord comprised papers on "More Common Diseases of the Ear" by Dr. William B. Newton, Alpena; "Infant Feeding," with demonstrations, by Dr. Don H. Duffie, Central Lake; "Acute Abdominal Lesions," by Dr. Frederick C. Warnshuis, Grand Rapids; "Obstetrics," by Dr. Frederick Mayne, Cheboygan, and "Observations from the Clinic of Pauchet, DeMartel, Paris, France, on Gastric Surgery," by Dr. Buell Van Leuven, Petoskey. The evening session, a public meeting, was addressed by Col. E. D. Rich on "The Water Supply in Northern Michigan Resorts" and by Dr. Warnshuis on "Value of a Personal Health Audit."——Dr. Wyman D. Barrett, Detroit, addressed the St. Clair County Medical Society, June 21, on "Operative Treatment of Hyperthyroidism," and Dr. Don M. Campbell, Detroit, on "Industrial Surgery of the Eye."——Prof. Frederick F. Blicke, Ph.D., College of Pharmacy of the University of Michigan, addressed the Oakland County Medical Society, June 21, on "The Development of Chemistry and the Manufacture of Synthetic Drugs."——Dr. Harold C. Robinson, Grand Rapids, addressed the Berrien County Medical Society, Niles, June 28, on arthritis, and Dr. Alexander M. Campbell, Grand Rapids, on gynecologic conditions in general practice.——The Wayne County Medical Society, Detroit, has put in book form the seventh series of Beaumont lectures by Dr. George Draper. Members are requested to call at the society rooms in the Maccabees Building to obtain their copies. —— About eighteen cases of food poisoning followed a family reunion at Ionia in July; all of the patients recovered.——Dr. Paul Roth, Battle Creek, addressed the Eaton County Medical Society at the annual outing at Pine Lake, Olivet, July 26, on "Physical Therapy and Its Place in Medicine"; Dr. and Mrs. Philip H. Quick and Dr. and Mrs. Arthur H. Burleson were the hosts.

MONTANA

Decrease in Death Rate.—The death rate for Montana for 1927 was 748 per hundred thousand of population as compared with 776 in 1926. According to the U. S. Department of Commerce, the decrease is accounted for by decreases in pneumonia, influenza, whooping cough and automobile accidents. During 1927, however, there were increases in the death rates from heart disease from 100 to 114 per hundred thousand of population and from meningococcus meningitis, from 3 to 9.

Joint Meeting of Professions.—The veterinarians, dentists, pharmacists and physicians of Fergus County held a joint meeting at Lewiston, August 7, to discuss matters of interest to the professions. After a dinner, at which the toastmaster was the president of the Fergus County Medical Society, Dr. Joseph G. Parsons, the speakers were Dr. Charles C. Wallin, who referred to the assistance the other groups had given the medical profession; O. P. Davis, D.V.S., spoke on the diseases of animals that affect man; James M. Shaver, D.D.S., presented a paper on "The Relation of Dentistry to Medicine"; Mr. J. W. Seiden, a member of the state board of pharmacy, spoke on the responsibility of dispensing pharmacists and the higher standards now required by colleges of pharmacy and the licensing boards. The general opinion of the initial joint meeting was that it should be held annually.

NEW HAMPSHIRE

Delegates Disapprove Action of State Board.—At the recent annual meeting of the New Hampshire Medical Society, Manchester, May 15-16, the house of delegates unanimously voted to express to the state board of registration in medicine its emphatic disapproval of the license to practice medicine in New Hampshire of Dr. William Matthews Robb. They considered the action of the board ill advised, and that the license of Dr. Robb should be revoked. Dr. Robb, who formerly practiced in New Hampshire, pleaded guilty about 1917 to illegal practice and was expelled from his local medical society. He later practiced in Boston, Massachusetts, in which state his license was revoked in 1923. He is reported to have been sentenced then to several years in the state prison for performing an illegal operation.

Annual Meeting of Surgical Club.—The thirty-first week end outing and annual meeting of the New Hampshire Surgical Club will be held at Gray's Inn, Jackson, September 24. As usual preceding the scientific sessions, members and their families and friends will gather for golf, fishing, boating, dancing, and this year a trip to the top of Mount Washington. Monday morning the members will be addressed by Dr. James W. Jameson, Concord, on "Preoperative Treatment" and Dr. David W. Parker, Manchester, on "Postoperative Treatment." In the afternoon, Dr. Elmer M. Miller, Woodsville, will give the president's address, followed by Drs. John P. Bowler and John J. Boardman, Hanover, on "Septicemia with Metastatic Osteomyelitis"; Dr. Murray Towle, Hanover, "Industrial Accident Surgery"; Dr. Frank H. Lahey, Boston, "Surgical Problems." Dr. Lahey will also speak at the banquet in the evening. The New Hampshire Surgical Club was organized in 1896; it meets in the spring and in the fall. The only living member among the founders is Dr. Ira J. Prouty of Keene.

NEW YORK

License Revoked.—The state board of medical examiners, June 28, revoked license number 15273, issued in 1920 to Dr. Perry W. Cheney, New York, because he had been found guilty by the court of general sessions of the county of New York of the crime of assault in the second degree.

Patient Dies in Chiropractor's Office. — The Bulletin of the Medical Society of the County of Erie states that Frank O. Hanson, "Buffalo's pioneer chiropractor," was arrested, May 8, following the death in his office of a 13 year old girl who was being treated. Hanson is not licensed to practice physical therapy. He is a carpenter by trade.

Society News.—The Wyoming-Livingston County Medical Society was addressed recently at the Silver Lake Country Club, Warsaw, by Dr. Albert D. Kaiser, Rochester, on "Relation of Tonsils to Rheumatic Heart Disease," and by Dr. William J. Orr, Buffalo, on "Indication for and Results of Transfusions for Children."——Dr. Marion C. Potter, Rochester, has been awarded the Santa Sava medal by the Serbian government for assistance in founding the American Women's Hospital at Monastir.——Dr. Matthias Nicoll, Albany, state health commissioner, addressed the Medical Society of the County of Herkimer at the Pine Crest Sanatorium, June 5, on the work of the state health department. —— Dr. John A. Pritchard, Ogdensburg, addressed the Jefferson County Medical Society, Clayton, June 15, on "Practical High Spots in Psychiatry." —— Dr. James N. Vander Veer, Albany, president-elect, state medical society, addressed the Greene County Medical Society, Greenville, July 10, on the work of the county societies in relation to the state society.

New York City

Personal.—Dr. Henry Hall Forbes sailed, July 13, to attend the annual meeting of the British Medical Association in Cardiff, Wales, and the International Oto-Rhino-Laryngological Congress at Copenhagen, August 1-2.——Dr. Jacques W. Maliniak has been appointed plastic surgeon to the Beth Israel Hospital, Newark, N. J., and associate plastic surgeon to the Sydenham Hospital, New York.

Orthopedic Scholarship Awarded. — The Hospital for Joint Diseases has awarded its second annual orthopedic schol-

arship of $2,400 to Dr. David Sashin. It affords six months study in orthopedic clinics in the United States and six months in Europe, after finishing which the recipient sends to the Hospital for Joint Diseases a report of his observations. The first award was to Dr. Joseph G. Wishner, who now is at Professor Putti's clinic in Bologna.

Study of Radiation at Cornell.—Twelve professors and many assistants on the faculty of Cornell University will engage in a cooperative study of radiation during the coming year. The research will involve nine major projects, each of which will concern itself with radiant energy of a particular wavelength. Funds for the work have been provided by the Heckscher Foundation for the Promotion of Research. The work will be coordinated, proceeding as a unit with the chemistry and physics departments cooperating.

The Passing of "Cholera Infantum."—The New York Department of Health notes that twenty years ago 4,000 children under 5 years of age died each summer of "cholera infantum." The department has prepared a table to show how this condition has improved. With a population almost 50 per cent greater than in 1901, the deaths of children under 5 in summer from diarrheal disease has dropped to 246. The department claims part of the credit for this saving of young life, as it inaugurated the compulsory pasteurization of the city's milk supply in 1913 and the division of child hygiene in 1918. One of the greatest decreases in diarrheal deaths under 5 years of age, however, was in 1902, when the deaths came down to 3,411 from 4,404 in 1901. They were above 4,000 again in 1904, 1905 and 1907, and had declined to 2,542 in 1911 and to 1,620 in 1916; they then went up in the following year to 2,025, in 1918 to 1,308, and in 1921 to 1,096, since which time they have gradually declined to 246 in 1927.

OHIO

Night Noise Reduced.—The mayor of Newton Falls, home of the Newton Steel Company, has ordered that all loud speakers be shut off completely or muffled well not later than 9:30 in the evening so that the steel workers who start work in the early morning hours may sleep. THE JOURNAL last week commented on the subject of noise as a health problem.

Dr. Zinninger Goes to China.—The China Medical Board of the Rockefeller Foundation has appointed Dr. Max M. Zinninger professor of surgery at the Peking Union Medical College. Dr. Zinninger has been with the Cincinnati College of Medicine and the Cincinnati General Hospital for about six years. He held the Ransohoff fellowship in surgery, 1922-1923, and the Cooper Proctor fellowship in surgery, 1924-1925, and has been assistant professor of surgery at Cincinnati. He is the son of Dr. George F. Zinninger of Canton.

Changes in Faculty at Western Reserve.—According to the Bulletin of the Academy of Medicine of Cleveland, the following changes have been made in the faculty of Western Reserve University School of Medicine:

RESIGNATIONS

Frank E. Bunts, M.D., as professor of surgery and clinical surgery; he becomes professor emeritus.
Roy W. Scott, M.D., as professor of medicine.

NEW APPOINTMENTS

Alfred T. Shohl, M.D., associate professor of pediatrics for five years.
Edward H. Cushing, M.D., clinical instructor in medicine for two years.
Edward Cathcart, M.D., clinical instructor in genito-urinary surgery for two years.

PROMOTIONS

Otto Saphir, M.D., assistant professor of pathology for three years.
James D. Pilcher, M.D., assistant professor of pediatrics for three years.
John A. Toomey, M.D., assistant professor of pedatrics for three years.
Charles C. McCoy, M.D., assistant professor of roentgenology for three years.
Claude S. Beck, M.D., assistant professor of surgery for three years.
James J. Joelson, M.D., assistant professor of genito-urinary surgery for three years.
Fred C. Oldenburg, M.D., senior clinical instructor in medicine for two years.
John A. Gammel, M.D., senior clinical instructor in dermatology and syphilology for two years.
John E. Rauschkolb, M.D., senior clinical instructor in dermatology and syphilology for two years.
Norman C. Wetzel, M.D., senior instructor in pediatrics for two years.
Charles L. Ruggles, M.D., senior clinical instructor in pediatrics for two years.
Walter B. Rogers, M.D., senior clinical instructor in surgery for two years.
James L. Reycraft, M.D., senior clinical instructor in gynecology for two years.
Frank R. Lyne, M.D., senior instructor in clinical pathology for two years.
Charles S. Stone, M.D., clinical instructor in medicine for two years.
Robert E. Barney, M.D., clinical instructor in dermatology and syphilology for two years.
Edward P. Neary, M.D., senior clinical instructor in surgery for two years.
Joyce Ian Hartman, M.D., instructor in pediatrics for two years.

PENNSYLVANIA

Maternity Hospital in Anthracite Region.—Drs. John, James and Lawrence Corrigan have purchased the estate of Ernest J. Sweetland in Hazleton and will open there about September 1 a modern maternity hospital, which will be open also to other physicians in the community. The Corrigan Maternity Hospital will be the first private institution of its kind in the entire middle anthracite region, and it is reported to have the good wishes of the community in general. The three Drs. Corrigan are all graduates of Jefferson Medical College.

Bucks County's Boisterous Chiropractors Jailed.—Some time ago in Butler, when two chiropractors were arrested for practicing medicine without a license, they and their friends succeeded in intimidating the alderman and the cases were dropped. The district attorney received new information, and had the chiropractors taken before another alderman. About 200 of their friends who attended were so unruly at this hearing that it had to be discontinued until afternoon, when it was arranged to have state police present to keep out persons not directly concerned. The chiropractors and their lawyers refused to attend the hearing until the police were dismissed. They were then taken before the court, where one chiropractor pleaded guilty and the other was convicted by the jury. Each was sentenced to thirty days in jail.

Philadelphia

Hospital News.—An eleven story $1,250,000 building for the combined St. Luke's Hospital and the Children's Homeopathic Hospital is under construction at Eighth and Thompson streets. The merger of the two hospitals was effected, January 16. Edward F. Henson is president of the combined organizations.

Dr. Rubinow Appointed Executive Director.—The Zionist Organization of America announced, August 11, that Dr. Isaac M. Rubinow had been appointed to the newly created position of executive director of that organization and of the United Palestine Appeal and would assume his duties, September 1. Dr. Rubinow is of Russian birth, coming to the United States in 1893, graduating in medicine at New York University, and receiving a Ph.D. later from Columbia University. He directed the establishment of several hospitals in Palestine, 1919-1923, and has been chiefly engaged in social and editorial work. For several years he has been director of the Jewish Welfare Society of Philadelphia.

WASHINGTON

State Medical Meeting.—The annual meeting of the Washington State Medical Association will be held at Seattle, August 27-30, with headquarters at the Olympic Hotel. The first day will be devoted to the golf tournament, the second day largely to papers by members of the state association and the last two days in part to papers on surgery by Dr. Dean Lewis, Baltimore; on urology by Dr. Arthur H. Crosbie, Boston; on rectal diseases by Dr. Louis A. Buie, Rochester, Minn., and on gynecology by Dr. Frank W. Lynch, San Francisco. The annual banquet will be Wednesday evening; the dance, Thursday evening.

Society News.—The Seattle Surgical Society was addressed, June 29, by Dr. Temple Sedgwick Fay, Philadelphia, on "Cranial and Cervical Lesions," illustrated with motion pictures. ——More than 100 physicians registered for the twelfth annual graduate medical course given at the University of Washington, July 16, and continuing for a week.——The Whitman County Medical Society will hold its next meeting in Colfax about September 20. At the June meeting Dr. Joseph Edward Preucel read a paper on acidosis. The society decided to continue health talks from station KWSC, Pullman, starting the next series, October 5.

Census of Mental Patients.—The State Custodial School of Washington had a total of 131 first admissions during 1927 as compared with 165 in 1922, according to a census made by the U. S. Department of Commerce with the cooperation of the state hospitals. The decrease in first admissions in Washington between 1922 and 1927 represents a still larger decrease relative to the general population of the state, as shown by the fact that in 1927 the first admissions amounted to 8.4 per hundred thousand of population and in 1922 they amounted to 11.6. The total number of patients in the state custodial school was 938 on Jan. 1, 1928, as compared with 159 on Jan. 1, 1910, and this increase was relatively much greater than the increase in the population of the state during this period. The number of patients under care per hundred thousand of population showed

an especially rapid increase during 1927, but decreased slightly from 1923 to 1926. Of the patients present, Jan. 1, 1928, 485 were males and 453 females.

WISCONSIN

State Medical Meeting at Milwaukee.—The Medical Society of Wisconsin will hold its annual meeting at Milwaukee, September 12-14, under the presidency of Dr. John J. McGovern, Milwaukee, and with headquarters at the Schroeder Hotel. A symposium has been arranged for each day, the subject Wednesday being "Immunization in Acute Infectious Diseases of Childhood"; Thursday, "Diseases of the Heart," and Friday, "Urologic Problems." Many of the papers will be presented by Wisconsin physicians, but the discussions will be given largely by guests, including Drs. Frank C. Mann and Waltman Walters, Rochester, Minn.; Benjamin A. Thomas, Philadelphia; George W. Hall, Chicago; William Colby Rucker, U. S. Marine Hospital, New Orleans; Walter M. Simpson, Dayton, Ohio; Hiram W. Orr, Lincoln, Neb.; Bernard H. Nichols, Cleveland, Ohio, and Archibald L. Hoyne, Chicago. The oration in medicine will be presented, Thursday afternoon, by Dr. Franklin C. McLean, Chicago, on "Lobar Pneumonia; Etiology and Specific Therapy," and the oration in surgery by Dr. Dean Lewis, Baltimore, Friday afternoon. Each day there will be scientific demonstrations from 11 to 12:30 o'clock. The entire Juneau Hall in the municipal auditorium has been reserved for showing the clinical application of the exhibits, and the demonstrators have worked for months that this feature may be of great benefit. For example, the Children's Hospital demonstration will consist of surgical procedures in pediatrics, treatment of burns, demonstrations of roentgenographic technic in infants, medical procedures in pediatrics, tuberculin tests, oxygen therapy, diagnostic aids and demonstrations of applications of casts and plaster beds. Other demonstrations will be on urology, dermatology, gross pathology and oto-ophthalmology; there will be a fresh tissue demonstration. The council will meet first at noon Tuesday, and the house of delegates, Tuesday afternoon. The annual golf tournament will be played on the Blue Mound Country Club. Prizes will be offered, but only one will be awarded to any one player. The president's and secretary's cups will be awarded for the low gross and low net scores.

GENERAL

Society News.—Dr. Harry G. Willard, Tacoma, was made president elect of the Pacific Northwest Medical Association at the seventh annual meeting, July 5-7, in Tacoma, and Dr. Frederick Epplen, Seattle, secretary. The next meeting will be in Butte, Mont., in 1930.——The Mississippi Valley Conference on Tuberculosis will be at Des Moines, Iowa, September 17-19. Persons interested are invited. The Mississippi Valley Sanatorium Association meets at this time also. A varied program of entertainment has been arranged, in addition to conferences, publicity clinic and well known speakers. Headquarters, Fort Des Moines Hotel. Make reservations direct.

Tri-State Meeting in Yellowstone Park.—The meetings of the Idaho, Montana and Wyoming state medical societies in Yellowstone National Park, August 27-29, in addition to the speakers noted in THE JOURNAL, July 28, will be addressed by Drs. Paul B. Magnuson, Chicago, on treatment of fractures; F. McCallum, Kansas City, Mo., "Presence and Management of Prostatic Hypertrophy," and Charles C. Tiffin, Seattle, "Safer and More Effective Goiter Surgery." Monday will be Idaho Day, Tuesday, Montana Day, and Wednesday, Wyoming Day. The houses of delegates of the societies meet each evening. There will be sightseeing trips through the park. All persons entering the park in their own automobiles will be met by park rangers, who will seal any firearms they find, as shooting is not allowed in the park. A registration fee of $3 for each private automobile is paid on entrance to the park. The speed limits on curves and grades are 12 miles and on the straightaway with no other car nearer than 200 yards, 25 miles. The government provides public camping grounds for those who bring their own outfits.

Lectures in English in Paris.—Under the direction of Paris University Medical School and the Association for Development of Medical Relations Between France and Allied Countries, clinical courses will be given in English in Paris in October by Profs. Emile Sergent, Antonin Clerc, Weil-Halle, Morax, LeMaitre and others in an effort to attract the attention of English speaking physicians to French clinical methods. The courses cover a variety of subjects; the fees range from 500 to 1,000 francs. Professor Sergent, from October 29 to November 3, will give ten lectures on diseases of the bronchi, illustrated with roentgenograms and anatomic specimens, each lecture being followed by demonstrations by former clinical chiefs of the clinics. Associate Professor Clerc's course, from October 20 to 30, will be on cardiology. There will be courses in pediatrics, lectures on surgery of the digestive tract and liver, ten lessons on surgery of the eye, and ten lessons on surgery of the ear, nose and throat. A certificate signed by the professor and dean of the Faculty of Medicine of Paris will be given those who have attended a course regularly. Inquiries should be addressed to the secretary of the Association pour le Développement des Relations Médicales, Faculté de Médecine, Paris (6e).

Obstetricians, Gynecologists and Abdominal Surgeons.—The forty-first annual meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons will be at Toronto, Ont., Canada, September 10-12, under the presidency of Dr. Palmer Findley, Omaha. The preliminary program is as follows:

Dr. Arthur M. Mendenhall, Indianapolis, "Teaching of Operative Obstetrics."
Dr. Edgar A. Vander Veer, Albany, "Causation, Prevention and Treatment of Postoperative Distention of the Abdomen."
Dr. John O. Polak, Brooklyn, "Do the Results of Surgery Justify Its Employment in Thrombophlebitis?"
Dr. Le Roy A. Calkins, Charlottesville, "Some Factor Governing Blood Loss in the Third Stage of Labor."
Dr. Isador C. Rubin, New York, "Insufflation of the Tubes as a Test for Sterility."
Dr. Everett D. Plass, Iowa City, "Relation of Cell Volume and Plasma Fibrinogen to the Blood Sedimentation Rate."
Dr. Frederick H. Falls, Chicago, "Hyperthyroidism Complicating Pregnancy."
Dr. James W. Kennedy, Philadelphia, "Reactions of the Peritoneum."
Dr. William Wayne Babcock, Philadelphia, "Vaginal Approach for Certain Intraperitoneal Operations."
Dr. Foster S. Kellogg, Boston, "Chorea Associated with Pregnancy."
Dr. Pascal Brooke Bland, Philadelphia, "Pyometra Following Irradiation for Cervical Carcinoma."
Dr. Percy W. Toombs, Memphis, Tenn., "X-Ray and Radium in Pregnancy."
Dr. Frederick A. Cleland, Toronto, "Fibroids of the Uterus."
Dr. William P. Healy, New York, "Cancer of the Cervix."
Dr. Robert D. Mussey, Rochester, Minn., "Hemorrhages of the Pubescent Period and Climacterium."
Dr. Jennings C. Litzenberg, Minneapolis, "Relation of Metabolism to Gestation."
Dr. Paul Titus, Pittsburgh, "Disturbances in Carbohydrate Metabolism as a Partial Answer to the Whitridge Williams Questionnaire on Eclampsia."
Dr. Raleigh R. Huggins, Pittsburgh, "Problems Associated with the Cervix."
Dr. Gordon K. Dickinson, Jersey City, "Liver and the Operation."
Dr. Charles W. Moots, Toledo, "Importance of Complete Urologic Investigations in All Obscure Cases."
Dr. Fred L. Adair, Minneapolis, "Infection in the Puerperium with Analysis of Five Thousand Cases."
Dr. Louis E. Phaneuf, Boston, "Complete Lacerations of the Perineum."

FOREIGN

The British Also Tire of Noise.—At a joint council meeting of the People's League of Health, London, July 12, a resolution was passed urging the league to bring to the attention of the government the need for the control of preventable noise in the streets. The following members of the medical council have been asked to form the deputation to present the subject to the ministry of health: Sir Edward Farquhar Buzzard, Sir Maurice Craig, Sir Robert Armstrong-Jones, Sir James Purves-Stewart, Dr. Alfred F. Tredgold, Dr. Thomas Beaton and Dr. G. Robertson.

Congress on Balneology.—The eighth International Medical Postgraduate Course with special reference to balneology and balneotherapy will be held at Carlsbad, September 23-29. Clinicians and scientists from the medical faculties of Germany, England, Finland, France, Holland, Italy, Austria, Switzerland, Czechoslovakia and Hungry will give addresses. A program of entertainment has been arranged. An invitation is extended to all physicians. Those who accept will receive a passport visé without charge and a 33 per cent reduction on all state railways in Czechoslovakia. Inquiries will be answered by Dr. Edgar Ganz, secretary of the medical postgraduate course in Carlsbad.

Medical Study Tour in France.—The directors of the Voyages d'études médicales aux stations hydrominérales et climatiques de France announce the twenty-first "medical study tour" of the mineral springs and climatic resorts of the Auvergne and the Bourbonnais, Sept. 1-12, 1928, under the scientific direction of Dr. Maurice Villaret, professor at the Faculté de médecine de Paris, and Dr. Paul Harvier, agrégé professor of the faculty. Half fare on French railways will be accorded to the place of assembling (Pougues). The charge of 1,100 francs includes all expenses from Pougues to the point of disbanding (Vichy). The tour is reserved for physicians and advanced medical students, who may register with Mlle. Machuré, sécretaire, Chambre Syndicale des Eaux Minérales, 21 rue de Londres, Paris IXe. No money need be sent with the first application.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 21, 1928.

Reform of the Lunacy Laws

Sir Frederick J. Willis, who has retired from the position of chairman of the board of control (the body entrusted by the government with the control of lunacy administration) has contributed to the *Times* two articles in which he surveys lunacy administration and suggests one important reform. He holds that there is no foundation for the allegation that sane persons are frequently certified as insane and detained in mental hospitals, or that cruelty to patients is practiced. The view seems still to obtain that insanity cannot be avoided; that nothing can be done to prevent or cure it. The English law is largely based on these ideas and is not in accord with scientific opinion of today. With comparatively few exceptions it is illegal to treat a person who is mentally ill until he has been certified as insane by physicians and a magistrate has made an order authorizing his detention. There is a very limited opportunity of giving treatment without certification in private mental hospitals and in registered hospitals if the patient or his friends can afford to pay for it and he is willing. The total number of voluntary patients, January 1, was 879, while the number of certified patients was 134,729. Thus the great majority of patients cannot come under skilled medical observation and treatment until their illness has reached an advanced stage. The ordinary physician has not received sufficient special training to enable him to treat mental illness. In all other forms of illness it is recognized that there is much greater chance of cure if treatment is undertaken early, and there is a consensus of medical opinion that the same principle would apply to mental illness, but the law has prevented it. The only hope of reducing the incidence of insanity and improving the recovery rate would be to alter the law so as to allow and encourage the early and skilled treatment of persons mentally ill. Notwithstanding the great improvements in recent years in the care of the insane, the incidence of insanity has not been materially reduced or the recovery rate materially improved. The following figures show the ratio per 10,000 of the population of the number of persons certified insane:

Year.	First admissions, per 10,000 population.
1869	4.07
1879	4.46
1889	4.58
1899	4.94
1909	5.04
1919	5.25
1921	4.91
1922	4.94
1923	4.93
1924	4.41
1925	4.46
1926	4.48

Soon after Sir Frederick Willis became chairman, the board of control called a national conference to consider in what ways lunacy administration could be improved. It unanimously passed a resolution asking that a bill might be passed in parliament empowering them to provide for the early treatment of mental illness without certification; to admit voluntary patients to mental hospitals without legal formalities; to establish clinics for the treatment of mental illness in its early stages; to undertake research, and to provide after-care. The recent royal commission on the subject also produced a valuable report. It pointed out the urgent need of greater facilities for early treatment of mental illness, but its recommendations were marred by one limitation. It recommended that patients with volition should be allowed to go anywhere voluntarily for treatment subject to the board of control being notified of the admission of the patient and receiving certain reports; but in regard to the nonvolitional patient, the suggestion was that treatment should be given only on the authority of a magistrate, who should be required to see the patient. The board of control, in giving evidence before the commission, suggested that certification should not be required either for a patient possessing volition who desired treatment, or for a person without volition. In regard to the patients without volition, the suggestion the board made was that they might on the recommendation of two physicians, and without certification, be received for treatment in any mental hospital or registered hospital or, if the institution or place had previously received their approval for the purpose of giving early treatment, in any licensed house or nursing home. Sir Frederick Willis holds that the present requirement of a magistrate's order is a bar to the early treatment of insanity, and that its removal is necessary if we are to reduce the amount of insanity in the country.

A Village Settlement for the Tuberculous

The Papworth Village Settlement for the Tuberculous is unique in this country in that provision is made both for patients and for their families. In the report for 1927, just issued, it is stated that during the year 193 men and forty-four women suffering from tuberculosis were admitted. All were trained in suitable industries; Papworth is, in fact, an industrial village of 700 people—men, women and children. Those not strong enough to fight their way in the world can, after treatment, earn a comfortable living. Of the 144 children living in cottages with their tuberculous parents, not one has caught the disease, owing to the careful medical supervision. The next task is to facilitate the progress of women patients, first to a stage of partial self-support, and then of complete self-support in the village settlement. There is great demand for such opportunities for women patients. More accommodation is much needed. After passing through the sanatorium and being trained in various trades, the patients enter hostels, or, with their families, cottages, where they are almost self-supporting. To build the hostels and cottages, money is required. The work has been highly praised by the minister of health, and many physicians who have come from the United States, France, Italy, Holland, Hungary and Switzerland. Dr. Geza Gall of the Joseph Sanatorium, Gyula, Hungary, says: "I have seen many things in Europe and America in the war against tuberculosis, but the grandest and most remarkable was Papworth, which shows the real way to conquer the social disease, tuberculosis."

Another Martyr to the X-Rays

An inquest was held on the body of Arthur Augustus Parsons, aged 51, for more than twenty years radiographer at the Seamen's Hospital, Greenwich, and for six years previously at Westminster Hospital. It was stated that he was one of the pioneers of his profession in London, and in the course of his duty contracted carcinoma. Although he realized his condition, he carried on his work between various illnesses. Two years ago he had a finger amputated, and some months later had to undergo a further operation. Mr. Arthur James Fisher, a representative of the Seamen's Hospital, said that Mr. Parsons had been a valued servant of the hospital, and they considered that he was one of the finest men of his profession in the whole of London. Dr. Arthur Davies, pathologist, said that death was due to carcinoma, contracted in direct consequence of his work. Mr. Parsons had carried out his duties with a high degree of efficiency and great sense of public duty. He was a martyr to science, for, knowing his own fate, he never failed to do his duty for those who came under his care. The coroner, recording a verdict of accidental death, told the widow that her hus-

band's whole object in life was to serve the public, and he had suffered the consequence. When he started his career the dangers attending radiologic work were extreme, and there were many deaths.

PARIS

(From Our Regular Correspondent)

July 4, 1928.

Two Cases of Leprosy in France

Following the recent decision to construct a special pavilion for the accommodation of the small number of lepers in Paris, two cases of leprous contagion have been reported to the Academy of Medicine by Professor Jeanselme. This is a reminder that this disease must be watched for in our climate. The first case, observed by M. Giacardy, concerns a young woman, native to France, who, after spending a year in French Guiana, returned home and later developed leprosy. Her husband, whom she married after she had returned to France, has remained exempt. The second case, observed by M. Spillman of Nancy, is of a Portuguese who has spent the past five years in France and who is affected with well developed leprosy, which was not discovered by the health officers who examined him at the frontier. In this connection, Spillman urged that a more strict surveillance be exercised at the frontiers, and recommended that pavilions for lepers be constructed in all large dermatologic centers, and that a leaflet on leprosy be prepared by the commission of the academy and sent to all physicians, as many have never seen a case of leprosy.

The Compulsory Treatment of Young Tuberculous Soldiers

The recent proposal by M. Brouardel to intern in a sanatorium all army conscripts affected with tuberculosis encountered considerable opposition. It was emphasized that it was an excellent opportunity to do some good prophylactic work, but attention was called to the great expense that the innovation would entail, while the *médecin inspecteur général* declared that the army was for the training of men who are physically fit and not for helping in the care of the sick among the civil population. The majority of the members of the academy took a favorable attitude toward the proposal, however. The following resolution presented by Dr. Lesage, in the name of the special tuberculosis commission, was then adopted and transmitted to the minister of war and to the minister of hygiene:

> The Academy of Medicine recommends that advantage be taken of the opportunity offered by conscription to provide those who are eliminated by the registration board on account of tuberculosis with the means of being treated in establishments already existing or in others to be created for that purpose. It regrets that some sanatoriums are closed while the hospitals of the large cities are overcrowded with tuberculous patients.

Dedication of the Dormitory of Argentina at the University City in Paris

Two new pavilions destined for the use of students of Argentina have been erected at the Cité Universitaire in Paris. There will be accommodation for 200 students. The French, Belgian and Canadian dormitories are already occupied; that of Japan will be opened next year, and the pavilion of the United States in two years. In 1931, England, Spain, the Netherlands and Sweden will also have their buildings completed. Plans are also being made for the erection of dormitories for Armenian and for Indo-Chinese students.

An Ultrafiltrable Tuberculous Virus

In collaboration with MM. Valtis and Lacombe, M. Calmette has been carrying out, in the Clinique d'accouchements de Baudelocque, in Paris, researches on intra-uterine transmission of tuberculosis. M. Arloing of Lyons has already pointed out that such transmission is possible through the blood, by means of an ultrafiltrable virus which represents an invisible sporular type of the tubercle bacillus. Their experiments, conducted on guinea-pigs, were always positive. Calmette, who was interested in finding the reason why his B C G vaccine sometimes proves ineffective, even when administered immediately after birth, took up again his researches on tuberculous pregnant women. They confirmed the discoveries of Arloing, and he has communicated his results to the Academy of Sciences. He found that frequently the blood of tuberculous women contains an ultravirus, which passes through all filters and which enters the blood of the child during the gestation period. The disease that is thus transmitted is not true tuberculosis but it may cause the death of the fetus by progressive denutrition. If such an accident does not occur, the child will remain exempt if he is removed at birth from the infected familial milieu and if he can escape a subsequent inoculation. Calmette concludes, therefore, that in such cases vaccination with the B C G vaccine is absolutely necessary, as it is the only means the child has of escaping a tuberculous infection to which he would be very susceptible.

Sunday Closing of Pharmacies

The Sunday closing of pharmacies in Paris continues to be a subject of discontent. The action was taken to satisfy the union of pharmacy employees.

BELGIUM

(From Our Regular Correspondent)

June 27, 1928.

The Belgian Medical Convention

The so-called Journées médicales belges were held in Brussels, under the organization of the editors of the *Bruxelles Médical*. The opening address was delivered by Prime Minister Jasper, who chose as his subject the question of creating a council on medical ethics, discussing it from an extramedical point of view. He contended that such a council would exert a decisive influence on the prestige of the medical profession by giving it a sense of unity and an *esprit de corps* which it now lacks. Other papers presented at the convention were by Dr. C. Serono, professor at the University of Rome, on the metabolism of carbohydrates and its relation to clinical pathology; Dr. Van der Hoeve, professor at the ophthalmologic clinic in Leyden, on diseases of the eye in Bourneville's disease; Dr. Possemiers of Antwerp, on domiciliary treatment of congenital weaklings; Dr. Damas Mora of Angola, Portugal, on medical assistance to be given natives, and Professor Nolf, on the nervous system of the intestine.

HEPATIC INSUFFICIENCY

Associate Professor Noël Fiessinger discussed rose bengal in determining hepatic insufficiency. He has developed certain tests with it which will be very useful for clinical purposes.

PROGNOSIS IN ARTERIAL HYPERTENSION

Professor Doumer studied the factors that permit the establishing of a prognosis in arterial hypertension, distinguishing complete hypertensions from hypertensions that are solely systolic. Young persons may have palpitations due to a hyperexcitability of their acceleratory system, their maximal pressure being above normal while their minimal pressure is not affected. Such hypertension is without importance. Complete hypertension in young subjects, however, is serious, for the substratum is usually a grave renal lesion. Syphilis may also be suspected. Hypertensions in the fifties are often well borne, and slight signs will not serve to establish a prognosis, as grave types are sometimes associated with functional disorders that are scarcely observed. Hypertension is slight up to age 19, average up to 25, and severe above 25. Severe hypertension is grave because it is usually complicated by renal lesions. Rupture of a cerebral vessel is usually fatal in such a case; the percentage of choles-

terol in the blood will serve to establish the prognosis. The hypertension associated with the menopause is frequently only of a limited type, and as such its prognosis is reassuring.

THE DOMICILIARY CARE OF CONGENITAL WEAKLINGS

Dr. Possemiers brought out that the chief cause of infant mortality is congenital weakness. The causes are numerous, and in addition to the pathologic factors there are important eugenic factors. The treatment is extremely difficult, requiring the care of competent nurses and the enlightened counsel of a children's specialist, which is best obtained in a nursery in which there is perfect isolation. Owing to the expense attached to this, however, Dr. Possemiers gives the preference to domiciliary care, and, to facilitate the work of the mother, has had an electric incubator constructed that operates automatically.

MAXILLARY MALFORMATIONS IN WEAKLY CHILDREN

In studying maxillofacial malformations in weakly children, Dr. Watry examined 200 inmates of the seaside preventorium of Clemskerke-sur-Mer, found 170 of them deformed, and reached the following conclusions: 1. A close interdependence between developmental disorders and maxillary malformations occurs. 2. The characteristic differences between the lesions of rickets and those developing where there is congenital weakness and a pretuberculous condition could be plainly demonstrated. 3. The frequency of malformations in weakly children is such that they should be reckoned as belonging to the clinical picture of infantile debility and should be considered in the crusade for the protection of weakly infants. 4. Apparently, in the majority the malformations develop secondarily when there is a predisposition to rickets or debility, and when once developed are accompanied by a pathologic vicious circle which can be broken only by the treatment of the maxillary malformations. 5. It is the failure to recognize this vicious circle that explains the present character of the results of numerous treatments for disorders of growth.

IMMUNIZATION FROM THE SOCIAL POINT OF VIEW

M. Zoeller drew two main conclusions from the account he gave of immunization: (1) that children aged from 15 to 18 months should be vaccinated against diphtheria, and (2) that soldiers, and all others predisposed to it, at any age, should be vaccinated against tetanus.

THE BELGIAN LEAGUE TO COMBAT RHEUMATISM

Professor Gunzburg presented an account of the work of the Brussels center of the Ligue belge contre le rheumatisme, the principal purpose of which is to determine the etiologic diagnosis, to ferret out the cases, and to proceed with the industrial reeducation of the patients. Each patient is examined by a group of four physicians: a clinician, a bacteriologist, a physiologist and a physical therapeutist. The case history is written in detail; the questionnaire of the international league is filled out; the case is discussed, and the analyses and researches to which the case gives rise are carried out. Treatment is then instituted. At the end of each session, a report is drawn up containing all the new and interesting points and the problems that the examination of the various cases has brought up. With regard to the classification of the different forms of rheumatism, the author pointed out that no agreement had been reached as yet and that each country has its own classification. It would be desirable to reach an understanding. One point on which all are agreed is the immense economic and social importance of rheumatism. The sums paid for disability due to rheumatism are enormous.

The observations of the Brussels center may be thus summed up: 1. The age of rheumatic patients is well along; the average age for the beginning of the disorder ranges between 40 and 50. 2. The age of the disease when the patient reaches the center is likewise considerable, for most of the cases date back more than ten years. Among the factors figuring in rheumatism the following have been noted: (*a*) a frank focus in many cases; (*b*) constitutional factors (menopause and endocrine disorders) in others: (*c*) the state of the reaction and the circulation of the skin, and (*d*) the influence of cold and dampness. With regard to the results of various forms of treatment, an inquiry was instituted among the patients. The average duration of treatment was three months, with the relief of pain in 50 per cent of cases and the improvement of motion in 60 per cent, some patients being able to resume their previous occupations. Between 40 and 50 was found to be the average age for the beginning of rheumatism, with most of the patients having had the disease more than ten years before coming to the center.

THE BELGIAN SOCIETY OF GYNECOLOGY AND OBSTETRICS

Several authors presented clinical cases, particularly of Krükenberg tumors, and primary gastric lesions with ovarian metastases.

Concomitant with the Belgian convention, several learned societies held their annual meetings.

MADRID

(From Our Regular Correspondent)

July 14, 1928.

Plans for the "University City"

In the report of the recent meeting of the building committee of the "University City," the secretary, Don Florestan Aguilar, announced that the bull fight held lately in Madrid for the benefit of the "University City" had cleared 47,500 pesetas. He announced, also, that it had been agreed to include the veterinary school among the buildings of the city. It was agreed that a committee composed of a professor of the veterinary school and an architect should visit the veterinary schools of Leipzig and Munich to collect fundamental principles to be used in the school of Madrid. Those German veterinary schools are considered by the committee to be the best in the world. Señor Aguilar presented the plans for a dormitory in the "University City" for the Spanish-American students. The funds for the building are the gift of Dr. Del Amo. The project is entrusted to Señor Nebot, director of the School of Architecture of Barcelona. It was agreed that the work should begin immediately. Dr. Del Amo D. Gerardo is a physician from Madrid who emigrated to Los Angeles, where he has accumulated an immense fortune.

The supervising architect, Señor Lopez Otero, explained the whole project. In this plan it is estimated that the cost of the work will be 130 million pesetas. The mayor of Madrid ordered that the municipal hospital, which is to be built with the three million pesetas that the Count of Guaqui left for this purpose, should be constructed on the land of the "University City" and in connection with the hospital of the medical faculty.

Public Health

General Martinez Anido, vice president of the board of health and minister of the interior, states that the intention of the government is primarily to make Spain a healthy and a sanitary nation. Thus it is doing special work in combating leprosy, tuberculosis, venereal diseases, cancer and trachoma.

A leprosarium has been established in Granada by the Union of Provincial Boards of Southern Andalusia. Another will be established in Orense. The leprosarium now in use at Fontilles is a model of its kind, and is partly maintained at government expense.

In Madrid there are special clinics for the treatment of advanced tuberculosis. There is also a pavilion exclusively for tuberculosis in the King's Hospital. It is impossible for them to take care of all cases of tuberculosis at the present time, however, and other sanatoriums will be established. The government intends to provide each province with a hospital for this purpose.

La Magdalena, a hospital for the treatment of venereal diseases, was established in Barcelona in 1922. It is now used for the isolation and treatment of women patients only. They numbered 400 in the last census. An antivenereal dispensary recently opened in Madrid.

A large sum of money has been appropriated to combat cancer.

A first attempt is being made to combat trachoma. Dispensaries have been established in several provinces.

Of the diseases now prevalent in Spain, General Anido thinks that tuberculosis and leprosy deserve the most attention.

Lectures by Professor Hoffmann

Professor Hoffmann the syphilologist, of Heidelberg, who with Schaudinn contributed so much on the etiology of syphilis, recently gave some lectures in Madrid. If his therapeutic suggestions were not accepted without discussion, his personality, on the other hand, made an impression from the first moment. He gave his lectures in Spanish, and his simple, frank and sincere character earned for him the affection of all his Spanish colleagues. He was honored with a banquet at which many specialists and general practitioners were present, and in his toast, Professor Hoffmann showed himself charmed by Spain. He eulogized the activities and advances attained by the Spanish syphilologists and promised to return to this country whenever possible.

Dental Caries in Navarra

Dr. Clavero, in a recent lecture, considered dental caries in infants. He is the author of a dental manual for schools. In Navarra, where he practices, dental caries is most prevalent in the capital, Pamplona, occurring in 96 per cent of infants. It decreases to 72 per cent in the rural district of Tudela. In the asylums and orphan homes, figures are as high as 98 per cent. The disease is more frequent among boys than among girls. Dr. Clavero believes that improper diet is the primary cause of its frequency.

Dr. Aguilar Honored

Dr. F. Aguilar, founder of the dental school in the College of Medicine of Madrid, has been given the title of Viscount de Casa Aguilar by the government. This is the first time that a physician has been so honored.

The Second Spanish-Portuguese Congress of Urology

In order to reciprocate for the reception that the Spanish urologists received in Portugal when the first congress of Spanish-Portuguese urologists took place, the Spanish physicians have welcomed the Portuguese urologists attending the second congress of urology in Madrid. The president of the Portuguese association, Dr. Angelo da Fonseca, addressed the congress. At the final banquet he said that the time of conquest had passed and had been succeeded by a period of scientific discoveries. Gen. Primo de Rivera replied in kind. Thus, a meeting of specialists in urology attained international political importance. The congress was organized by the secretary of the Spanish Association of Urology, Dr. Isidro Sanchez Covisa. The presiding officer was the president of the association, Professor Peña. Dr. Reinaldo dos Santos spoke on the "Present Status of Surgery of the Ureters" and Dr. Oreja of San Sebastian, Gipuzcoa, Spain, on "Technic and Results of Prostatectomy."

Gipsy Dances as a Cause of Racial Strength

Before the Society of Hygiene of Madrid, Dr. Decref spoke on the benefits to be derived from the Gipsy dances, which now are known all over the world. Dr. Decref is an academician of repute and was the first to teach orthopedics in Spain. Dr. Decref believes that the dances with their harmony, rhythm, agility and buoyancy are more beneficial than the rigid movements of Swedish gymnastics.

BUENOS AIRES

(From Our Regular Correspondent)

July 9, 1928.

Financing the Hospitals

The government has recently established large polyclinics in Bahía Blanca and in Pergamino, costing 3,500,000 pesos each; and regional hospitals in Lobos, Junin and General Villegas, costing 450,000 pesos each. The Bahía Blanca polyclinic will need an annual budget of 800,000 pesos, plus the expenses of installation; half of this budget will be raised by the city and half will be contributed by the state or national government.

New Disturbances in the Medical Schools

The unusual situation in the medical schools caused by the interference of the students in the government of the universities has just occasioned new disturbances in Rosario and in Cordoba. In Cordoba, to celebrate the anniversary of the so-called university reform, a general strike was declared in commemoration of the event. Later, the students compiled the following reform project: 1. The university professorship will last six years, and the professor will present his resignation at the end of this pediod. 2. The students will participate actively in the government. 3. Their representatives, to consist of an equal number of alumni and of undergraduates, will be chosen by the professors. 4. Any person who is qualified, whether or not he has a university degree, shall be entitled to give courses. 5. There will be free discussion of the social problems of the university. The strike still continues.

In Rosario, the students demanded that the board of the medical faculty hold examinations for promotion in July as well as those now held in December and March. The board refused to do this, and the students attacked the faculty. They were dispersed by order of the federal judge, after which the executive board suspended the offenders and temporarily closed the school.

Honorary Prizes of the Mitre Institution

This institution, designed to stimulate scientific and artistic activities, recently held a meeting to reward the best clinical or experimental work on some parasitic disease of the country. The first prize of 2,500 pesos was awarded to Dr. Carlos Lagos García for a clinical study on pulmonary hydatid cysts in children, based on a twenty years' collection of 120 observations. An unfortunate coincidence of the meeting was Dr. Garciá's sudden death, which occurred a few hours after the decision of the board. A second prize of 1,000 pesos was awarded to Dr. F. Niño for his work on American trypanosomiasis. The usual prize for medicine was awarded to M. Royer for his work on the fate of urobilin; the prize for pharmacy was given to J. Folcini for a study on the different effects derived from fluorine and diphenyl, and the prize for odontology was won by J. Chanelles for his work on Howe's use of silver nitrate in the treatment of dental caries. Two other prizes of 500 pesos and a gold medal were awarded for the best research work of the university alumni.

Conferences

An announcement was made that Professors Marinesco of Bucharest, Jakob of Hamburg, and Tiffeneau and Sergent of Paris would soon arrive to give courses or conferences in this city.

At the suggestion of the National Academy of Medicine, a series of conferences were recently delivered by Drs. A. Gutierrez, Bonotino Udaondo, A. Peralta Ramos and B. A. Houssay on subjects in the fields of anatomy, clinical medicine, clinical surgery and physiology.

Personal

Dr. Emilio Coni, an enthusiastic promoter of hygiene, and Dr. Felipe A. Justo, professor of hygiene in the School of pharmacy, have recently died.

Dr. G. Bosch Arana has been appointed professor of surgery on the Buenos Aires medical faculty.

The asylum for feebleminded at Torres has recently unveiled a bronze bust of its founder, Dr. D. Cabred.

POLAND

(From Our Regular Correspondent)

June 7, 1928.

The Study of Respiration in Skiers

The study of work and fatigue can profit much by examination of persons who engage in strenuous sports. Likewise it is reasonable to suppose that modifications in gas metabolism would be more easily established under conditions of limited oxygen supply. Skiing demands considerable effort, and in European countries good climatic conditions for skiing are not found except at an altitude of from 600 to 800 meters above sea level. At these altitudes the air is rarefied. Skiing therefore is particularly adapted for the study of work and fatigue. Articles on the subject have been published by Lijenstrand and Stenströnne, Loewy and Knoll.

The Technic of Roentgenographic and Roentgenoscopic Examination of the Apexes of the Lungs

Roentgenographic and roentgenoscopic examinations of the apexes of the lungs, according to a recent author, are made in the army in thousands of conscripts, recruits and others. In most cases, however, the radiologic diagnosis is not very exact. It is commonly confined to such expressions as "veiled apex," "opaque apex." The following method has been proposed of late in an effort to obtain clearer pictures: The direction of the rays should be anteroposterior, the erect subject having his back toward the apparatus. The radiologist places his right hand on the abdomen of the patient, and his left hand on the nape of the neck. With his hands in the positions stated, the radiologist inclines the body of the patient forward and keeps him in that attitude. Then, holding his left hand in place, he carries his right hand to the forehead of the patient, pressing hard until the occiput of the patient almost touches the screen. The patient must be prevented from bending his legs. Roentgenograms made in this position of anteroflexion of the body with retroflexion of the head show that the apexes stand out better and that their contours become more distinct. In order to obtain a frank picture of the apexes, the subject should be asked to take a deep inspiration. The opacity of an apex varies in intensity according as the direction of the rays is postero-anterior or the reverse. It is advisable, therefore, not to give a diagnosis of "opaque apexes" unless an opacity is observed not only in the postero-anterior direction of the rays but also in the inverse direction.

Observations of an Army Physician on the Physical Education of Recruits

Observations of an army physician on 367 recruits enrolled in a regiment of mounted chasseurs showed that, during a period of three months, their physical development made progress. The author emphasizes the importance of the first medical examination of recruits and the need of continued supervision of young soldiers during training. The article ends with the following conclusions: 1. Good instructors in physical education must be chosen. 2. Games, shows and other distractions must be provided for young soldiers. They must be treated not only decently but kindly. 3. The favorable effects of physical education in subjects presenting pulmonary lesions are somewhat doubtful, as the progress of tuberculous lesions may occasion great surprises. 4. The favorable results of physical education depend, to a great extent, on the way the physician collaborates with the line officers. 5. The physician must endeavor to gain the confidence of the colonel in command of the regiment.

Marriages

Edwin Weisman Burton, McKinney, Texas, to Miss Mary Elizabeth Kerr, at Lynchburg, Va., August 4.

Jay Justin Kazar, Tchula, Miss., to Miss Retha Kitchens of Stamps, Ark., at Memphis, Tenn., June 7.

Nicola V. Emanuele to Miss Catherine Salerno, both of Chicago, July 8.

Waldo G. Homan to Miss Annette Leonard, both of Burns, Ore., June 27.

Joseph A. Scopilite, St. Louis, to Miss Pauline Newbill, June 27.

Deaths

John Daly McCarthy ✠ New York; Harvard University Medical School, Boston, 1923; member of the American Psychiatric Association and the American Orthopsychiatric Association; instructor in psychiatry, Columbia University College of Physicians and Surgeons; director of health education for the board of education; formerly on the staff of the Vanderbilt Clinic; aged 41; died, July 31, at the Mount Vernon (N. Y.) Hospital, of bronchopneumonia.

Harry Kahn, Chicago; Northwestern University Medical School, Chicago, 1898; member of the Illinois State Medical Society and the American Academy of Ophthalmology and Oto-Laryngology; formerly instructor in pharmacology, clinical ophthalmology and otology at his alma mater; attending otolaryngologist to the Michael Reese Hospital; aged 59; died, July 17, at the North Shore Health Resort, Winnetka, Ill., of cerebral hemorrhage and hemiplegia.

Daniel Lichty ✠ Rockford, Ill.; Chicago Medical College, 1871; past president of the Winnebago County Medical Society; Civil War veteran; for many years member and at one time president of the board of education of Rockford; formerly president of the board of trustees of the Rockford Municipal Sanitarium; aged 83; on the staff of the Rockford Hospital, where he died, July 23, as the result of injuries received in an automobile accident.

Tom Sperring Mebane ✠ Maj., M. C., U. S. Army, Washington, D. C.; Columbia University College of Physicians, New York, 1913; commissioned in the medical corps of the army as a first lieutenant in 1918; was promoted to major in 1919; aged 40; chief of the orthopedic section of the Walter Reed General Hospital, where he died, June 10, of carcinoma of the stomach and esophagus.

Benjamin Edelstein Elliott ✠ Chicago; Northwestern University Medical School, Chicago, 1910; associate professor of obstetrics, Loyola University School of Medicine; served during the World War; aged 41; on the staffs of the Misericordia Hospital and the Mercy Hospital, where he died, August 2, of embolism.

James Henry Black, Lebanon, Ind.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906; past president and secretary of the Boone County Medical Society; veteran of the Spanish-American War; on the staff of the Williams Hospital; aged 56; died, July 26, of angina pectoris.

Edward Victor Amett ✠ Lawrence, N. Y.; Fordham University School of Medicine, New York, 1915; served during the World War; on the staffs of the New York Polyclinic Medical School and Hospital and the New York City Hospital; aged 43; died, July 19, at the Neurological Institute, New York.

Pearl Mitchell Hall ✠ Ah-gwah-ching, Minn.; Hahnemann Medical College and Hospital, Chicago, 1882; formerly health officer of Minneapolis; superintendent of the Minnesota State Sanatorium for Consumptives, and on the staff of the Walker (Minn.) Hospital; aged 67; died, July 18, of heart disease.

S. Devon Calonge ✠ Salt Lake City, Utah; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1908; served during the World War; aged 49; on the staffs of the Salt Lake General Hospital and St. Mark's Hospital, where he died, July 14, of injuries received in an automobile accident.

Arthur Alfred Gillette ✠ Rome, N. Y.; University of Michigan Medical School, Ann Arbor, 1881; on the staffs of the Rome Hospital and the James A. Murphy Memorial Hospital; aged 72; died, in June, at the Palmer Memorial Hospital, Boston, of carcinoma of the rectum.

Frederic Vanriper Shute, Bellingham, Wash.; Colorado School of Medicine, Denver, 1903; formerly county health officer; aged 48; died, June 18, at St. Joseph's Hospital, of shock and acute dilatation of the stomach, following a fracture of the femur received in a fall.

John E. Lemming, Stanton, Ky.; Medical College of Ohio, Cincinnati, 1884; member of the Kentucky State Medical Association; president of the Powell County Medical Society; aged 83; died, July 21, at the Clark County Hospital, Winchester, of intestinal influenza.

Eugene Lewis Daniel, Atlanta, Ga.; Eclectic Medical College, Cincinnati, 1913; member of the Medical Association of Georgia; on the staffs of the Georgia Baptist Hospital and the Davis Fischer Sanatorium; aged 43; died, July 4, of amebic abscess of the liver.

John Darwin Harrigan ⊕ Malone, N. Y.; University of Vermont College of Medicine, Burlington, 1897; past president of the Franklin County Medical Society; on the staff of the Alice Hyde Memorial Hospital; aged 57; died, July 16, of heart disease.

William Moorman Bassett, San Antonio, Texas; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1907; member of the State Medical Association of Texas; aged 47; died, July 13, in a local hospital.

Granville T. Matlack ⊕ Wilkes-Barre, Pa.; Jefferson Medical College of Philadelphia, 1884; on the staffs of the Wilkes-Barre General and the Mercy hospitals; aged 66; died, July 25, of edema of the lungs and tuberculous peritonitis.

Walter Booth Adams, Beirut, Syria; Medical Department of the University of the City of New York, 1890; professor emeritus of pharmacology, therapeutics and dermatology, American University of Beirut; aged 64; died, July 9.

Eugene Gregory Clancy ⊕ Chicago; Rush Medical College, Chicago, 1903; served during the World War; aged 51; on the staff of the Frances E. Willard Hospital, where he died, August 1, of coronary thrombosis and edema.

Dana Oliver Norton, Fort Collins, Colo.; New York Homeopathic Medical College and Hospital, 1902; member of the Colorado State Medical Society; served during the World War; aged 54; died, May 23, of myocarditis.

Roy W. Bartholomew, Evanston, Ill.; Chicago Homeopathic Medical College, 1900; member of the Illinois State Medical Society; aged 51; died, July 6, at the Evanston Hospital, of heart disease, following pneumonia.

James Anderson Work, Sr., Elkhart, Ind.; University of Michigan Medical School, Ann Arbor, 1870; member of the Indiana State Medical Association; aged 83; died, July 20, at Ann Arbor, Mich., of cerebral hemorrhage.

Hamilton Allan ⊕ San Diego, Calif.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1872; member of the Washington State Medical Association; aged 85; died, March 23, of myocarditis and nephritis.

Philip Doane McLarren, Halifax, N. S., Canada; Dalhousie University Faculty of Medicine, Halifax, 1917; served during the World War; aged 32; died, May 25, at the Victoria General Hospital, of pneumonia.

Frank Marion Payne, Lewisburg, Ala.; University of Virginia Department of Medicine, Charlottesville, 1911; member of the Medical Association of Alabama; aged 45; died, July 9, of a self-inflicted bullet wound.

John Edward Fairchild ⊕ Maywood, Ill.; University of Illinois College of Medicine, Chicago, 1926; aged 30; died, June 25, at the Municipal Tuberculosis Sanitarium, Chicago, of pulmonary tuberculosis.

Louis Leake Putney, Staunton, Va.; Medical College of Virginia, Richmond, 1914; member of the Medical Society of Virginia; on the staff of the Western State Hospital; aged 38; hanged himself, July 26.

Noel McHenry Moore, Augusta, Ga.; University of Georgia Medical Department, Augusta, 1898; clinical professor of pediatrics at his alma mater; aged 54; died, June 25, of pulmonary tuberculosis.

Carl Henry Troeger, Kenmore, Ohio; Ohio State University College of Medicine, Columbus, 1926; aged 26; died, March 27, at St. Joseph's Hospital, Fort Wayne, Ind., of carcinoma of the stomach.

John Andrew Shivers, Malden, Mo.; Memphis (Tenn.) Hospital Medical College, 1886; aged 64; died, June 12, of an abscess, following an attack of influenza which occurred about two months ago.

Florence Osmer Besse, Orleans, Mass.; Tufts College Medical School, Boston, 1907; aged 50; died, July 10, at the Somerville (Mass.) Hospital, as the result of a fractured hip and mastoiditis.

Charles Aaron Pauly, Cincinnati; Pulte Medical College, Cincinnati, 1881; for many years on the staff of the Bethesda Hospital; aged 70; died, July 12, of septic endocarditis, following a carbuncle.

Edward Cochrane Gow ⊕ Glens Falls, N. Y.; University of Buffalo School of Medicine, 1908; aged 45; on the staff of the Glens Falls Hospital, where he died, July 16, following an operation.

Joseph Arthur Laberge, Ste. Foye, Que., Canada; Laval University Faculty of Medicine, Quebec, 1921; aged 32; died, March 11, at the Laval Hospital, of pulmonary tuberculosis.

Chauncey Pratt Biggs, Pasadena, Calif.; Bellevue Hospital Medical College, New York, 1888; aged 72; died, June 15, of arteriosclerosis and probably carcinoma of the stomach.

Ira E. Aaron, Lyons, Ga.; Southern Medical College, Atlanta, 1894; member of the Medical Association of Georgia; aged 57; died, July 19, of gastro-intestinal toxemia.

Jacob A. Krumrine, Chicago; University of Pennsylvania School of Medicine, Philadelphia, 1867; aged 86; died, July 31, of arteriosclerosis and gangrene of both feet.

George H. Pugh, Burbank, Ohio; Western Reserve University School of Medicine, Cleveland, 1882; aged 73; died, July 16, at Lodi, of cerebral hemorrhage.

Harry L. Mantor, Sidney, Neb.; University of Nebraska College of Medicine, Omaha, 1909; aged 46; died, July 5, of intestinal hemorrhage and myocarditis.

P. Elie F. Pager, St. Hermas, Que., Canada; University of Montreal Faculty of Medicine, Montreal, 1881; aged 71; died, February 24, of heart disease.

Jamie Alloway Cuming, Pace, Miss.; Medical Department University of Tennessee, Nashville, 1900; aged 49; died, April 9, of myocarditis following influenza.

Enoch George Clark, Middletown, Del.; University of Pennsylvania School of Medicine, Philadelphia, 1867; aged 84; died, August 1, of arteriosclerosis.

Warren Bradford Holden, New York; Medical Department of Columbia College, New York, 1891; aged 59; died, in July, of chronic myocarditis.

Lewis Curtis Messner, Potomac, Ill.; Rush Medical College, Chicago, 1872; for many years bank president; aged 83; died, July 22, of paralysis.

William J. Bethell, Winslow, Ind. (licensed, Indiana, 1897); formerly member of the state legislature; aged 79; died, July 14, of nephritis.

William A. Hosick ⊕ Cleveland; Western Reserve University School of Medicine, Cleveland, 1885; aged 65; died, July 5, of cerebral hemorrhage.

Philip Frank Hubler, Pittston, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1877; aged 77; died, April 18, of pneumonia.

James S. Brown, Mecca, Ohio; Western Reserve University School of Medicine, Cleveland, 1882; aged 74; died, June 27, of heart disease.

Alexander F. Horton, Brooklyn; Long Island College Hospital, Brooklyn, 1881; aged 70; died, in July, of chronic nephritis and arteriosclerosis.

Martha M. De Graw, Scranton, Pa.; Woman's Medical College of Pennsylvania, 1877; aged 83; died, June 18, of cardiorenal disease.

Evance Rochette, Oka, Que., Canada; Laval University Faculty of Medicine, Quebec, 1872; aged 78; died, January 7, of acute gastritis.

John F. Trahern, Belington, W. Va. (licensed, years of practice); aged 81; died, April 2, of cerebral hemorrhage and arteriosclerosis.

John Edward Overly, Columbus, Ohio; Medical College of Ohio, Cincinnati, 1883; aged 73; died, July 25, of intestinal obstruction.

Harry M. Parrett, Kokomo, Ind.; Marion-Sims College of Medicine, St. Louis, 1897; aged 60; died, July 25, of a mediastinal tumor.

Allen K. Mosely, Grandview, Ill. (licensed, Illinois, 1878); Civil War veteran; aged 83; died, June 29, in a hospital at Paris.

John S. Simcox, Covington, Ky.; Pulte Medical College, Cincinnati, 1889; aged 75; died, July 24, of epilepsy.

Correspondence

SPINAL ANESTHESIA

To the Editor.—In THE JOURNAL, July 21, page 192, is an answer to the Bessesen Clinic relative to "Statistics of Spinal Anesthesia." I disagree with the following statements: "A Trendelenburg position may be employed but only after the anesthesia in the lower extremity has appeared, indicating that the drug is fixed to the lumbar segments.

Patients must be placed in the Trendelenburg position immediately after the injection has been made. Subarachnoid block causes circulatory changes inherent to the method, and all the other symptoms associated with it are chiefly subordinate to these changes. Respiratory failure following the injection of an anesthetic solution into the subarachnoid space is the result of acute anemia of the brain. Anemia of the brain is induced by unnecessarily keeping the patient too long in the erect position or head up, with the intention of avoiding gravitation or diffusion of the drug to the brain centers.

I have used the Trendelenburg position since 1916 and have, in more recent years, been convinced not only that this position is imperative during spinal anesthesia but that it should be assumed immediately after the injection of the anesthetic drug has been made in the subarachnoid space, without loss of time. I am glad to state that by this technic I have had no death attributable directly or indirectly to spinal anesthesia and my teaching at the New York University and Bellevue Hospital Medical College is absolutely along the line of the present letter.

My aim in expressing this opinion is not to enter into any discussion but to correct an erroneous opinion prevailing in the profession, opinion based on an old theory, that the drug gravitates to the brain in the Trendelenburg position and results in toxic symptoms, respiratory failure and, finally, death.

The Trendelenburg position immediately following the injection is one of the basic principles of the method of spinal anesthesia.

GASTON LABAT, M.D., New York.

THE VEGETARIAN DIET

To the Editor:—In a recent editorial you conclude that "optimal nutrition of human beings cannot be obtained with purely vegetarian diets," on the basis of experimental feeding of such diets to rats. May I note two important exceptions to this conclusion?

1. With regard to human beings, Hindhede demonstrated clearly in his lecture given at the Third Race Betterment Conference held at Battle Creek, Mich., in January, that optimal nutrition of human beings can be secured on such a simple regimen as potatoes and vegetable margarine even if continued for several years. Furthermore, he presented valuable evidence to show that children of the school age may grow and be in proper nutrition with vegetables as the only source of protein. Hindhede has worked solely with man rather than with the rat and perhaps that is why we disregard his work.

2. The second point has to do with feeding of a vegetarian diet to a rat. The failure of a rat to grow optimally on such a diet may mean either (*a*) that the diet is adequate but that the rat has not eaten enough of it to grow properly—Lusk has pointed out that, *ceteris paribus*, growth proceeds proportionally to ingested calories—or (*b*) that the diet is inadequate although the rat has eaten enough calories.

The rejection in part or in whole of a thoroughly adequate diet by a rat is not uncommon; the rat demands "flavor" in the food just as do we. In THE JOURNAL, Nov. 19, 1927, p. 1770, Cogwill presents striking evidence of the adequacy of a cereal diet for the rat from the standpoint of growth and nutrition. One of the diets, which yielded 93 per cent of its calories in the form of cereals, also contained 3 per cent of liver and gave excellent growth and nutrition. It is true that a small amount of animal protein was thereby included, but the effect of such a small amount probably lay more in the "flavor" it lent to the diet rather than to any other significant contribution. Rats do prefer diets containing even small amounts of liver or beef protein, especially the former. In other words, vegetable diets or any other diet will fail with rats if they do not happen to like it well enough to ingest the proper calories. We should not confuse the flavor of a diet with its nutritional adequacy.

MARK FALCON-LESSES, M.D.,
Department of Nutrition, University Hospital, University of Michigan,
Ann Arbor, Mich.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

CERVICAL POLYPS — FALLING HAIR — REMOVAL OF SUPERFLUOUS HAIR — CARE OF TOENAILS

To the Editor:—1. Are radium and electricity in any form used for the cure of cervical polyps? 2. Is ultraviolet exposure of the scalp for stimulating hair growth quite safe, with no danger of hair loss, in the hands of an experienced operator? 3. What formula or proprietary preparations may safely be recommended for removal of hair in axilla and to reduce perspiration? 4. What may be done to prevent or cure excessive thickening and hardening of toenails? Please do not publish my name.

M.D., Arizona.

ANSWER.—1. Electricity may be used for the removal of cervical polyps in the form both of the electric cautery and of the radio knife. The electric cautery tip may consist either of wire or a solid blade. Radium, as far as is known, has not been used for the cure of cervical polyps alone.

2. Ultraviolet exposure of the scalp is a safe method of treatment. There is no danger of hair loss. Too prolonged exposures may make the hair excessively dry. Many dermatologists are skeptical about the value of the ultraviolet ray in stimulating hair growth. Nagelschmidt is the most enthusiastic advocate of this method of treatment.

3. Axillary hair can be removed with depilatory pastes containing barium sulphide or with a depilating wax. Neither method is entirely safe. A dermatitis or folliculitis is often the result. Shaving seems preferable. Excessive perspiration may be controlled by dabbing on 25 per cent solution of aluminum chloride every second or third day for three applications.

4. Excessive thickening and hardening of the nails may be due to traumatism, physical or chemical irritation, fungus infection or some systematic disorder, such as cardiac disease or acromegaly. Hypertrophy with deformity (onychogryphosis) is usually due to pressure or injury causing a widening of the nail-fold, or there may be a thickening of the nail-bed, which raises the nail up and produces such conditions as claw-nail. Preventive measures include removal of the etiologic factors, avoidance of pressure from tight shoes, and more careful manicuring. Ten per cent potassium hydroxide solution following by curetting is a helpful measure.

INDUCTION OF LABOR

To the Editor:—Is it the teaching in medical schools today to separate the membranes—thus inducing labor—about two weeks prior to the period of gestation, with the idea in mind of getting a smaller baby, saving the mother less trouble by so doing than if she went to term? If this procedure is done, just when should the membranes be ruptured? The theory is advanced that babies of 7 and 7½ pounds do better than those of from 8 to 9 pounds. Isn't there some danger connected with this procedure? During my medical teaching, which wasn't many years ago, this was taught only in rare cases. Please omit name.

M.D., Wisconsin.

ANSWER.—It is not good practice to induce labor at any time without a scientific, clean-cut indication; and the reason given is not one. If a patient is definitely going far beyond term, one may try to start uterine action by means of a small dose of quinine (in absence of idiosyncrasy) and castor oil. The nasal application of pituitary may be tried if due precautions are observed. Stripping the membranes is not without danger of infection and rupture of the membranes. This is often followed by prolapse of the cord, and the disadvantages of a dry labor for mother and baby.

ABSENCE OF EFFECT FROM GLYCEROPHOSPHATES

To the Editor:—Are the glycerophosphates as contained in the popular tonics, such as neurophosphates, phosphorin, etc., absorbed, or is the apparent well being after taking them due to the strychnine which they contain?

New York.

ANSWER.—Glycerophosphate is absorbed; but does not yield phosphate action to the system. The general consensus of critical opinion is that the theory under which glycerophosphates were introduced into medicine is fallacious and that they are useless as tonics. Whatever effects are observed from the mixtures in which these salts are generally buried, may be safely ascribed to the other ingredients.

DIAGNOSIS OF INTESTINAL DISTURBANCE WITH FLATUS IN AGED MAN

To the Editor:—I have a patient, aged 87 years, who has been doing clerical work until recently. He has very good health, but when arising suddenly from a chair is frequently troubled by the escape of flatus which is audible and beyond his control, with consequent embarrassment to him. Any suggestions as to treatment would be appreciated. Please omit name.

M.D., Indiana.

ANSWER.—The patient may be troubled with chronic constipation associated with a good deal of stasis in the lower part of the cecum and sigmoid. In old persons an atonic condition of the bowel in some cases allows flatus or liquid feces to pass through canalized masses of hardened feces into the rectum. Involuntary expulsion of feces may occur with slight bodily movement, and in others flatus is expelled very easily. The indication for treatment is the relief of constipation. In a younger person a diet of roughage and occasional use of an oil retention enema is of help. In the patient described it might be advisable to administer liquid petrolatum in 30 cc. doses once or twice daily in hope of softening some of the fecal mass. Daily irrigations with warm water or even manual removal of fecal masses may have to be resorted to as a last resort. Of course the instructions presuppose that a complete examination of the patient has not revealed a serious organic condition of the colon or rectum.

GLUSIDE — ECLO TABLETS

To the Editor:—1. Does Gluside U.S.P., more popularly known as saccharin, do harm in any way? 2. Recently I was given a bottle of Eclo tablets. These are supposed to contain vitamin D. Do these tablets prevent rickets? Please omit my name.

M.D., Massachusetts.

ANSWER.—1. There is much conflicting evidence on this subject. Dosages and individual susceptibilities are concerned.

2. Eclo Tablets were found unacceptable for New and Nonofficial Remedies because "it was an unoriginal preparation marketed under a proprietary nondescriptive name; because it was marketed with unwarranted claims; and because its vitamin A content was not sufficiently high to warrant recognition." When the Council's observations were submitted to the Pitman-Moore Company, the firm replied that the sale of this product had been discontinued and that another product prepared by a different process was being marketed. The Pitman-Moore Company has not submitted information in regard to this new product to the Council and the Council has made no examination of it.

ACRIFLAVINE BASE IN URINARY INFECTIONS — REMEDY FOR MIGRAINE

To the Editor:—1. Recently I have had far better results in clearing up infections of the urinary tract with acriflavine base ("neutral" acriflavine) in half-grain doses three times daily (enteric-coated pills) than with other so-called urinary antiseptics, e. g., methenamine, methylene blue, salol and hexylresorcinol. Is this in accord with the experience of others? 2. I have been prescribing for the relief of migraine the following mixture, found on page 133 of "Technic of Medication" by Bernard Fantus, M.D., published by the American Medical Association:

Sodium salicylate	20 Gm.
Potassium bromide	40 Gm.
Sodium bicarbonate	20 Gm.
Tartaric acid	18 Gm.

Dispense in bottle.

Sig.: Heaped teaspoonfull in glass of water every hour until better. My patients tell me that this combination is efficacious but they all complain of a disagreeable sweetish taste. Can you suggest a modification that will correct this objectionable feature of an otherwise useful prescription? Please omit name.

M.D., Florida.

ANSWER.—1. Acriflavine base (so-called neutral acriflavine) tends to render the urine antiseptic. Critical comparative clinical studies on the various urinary antiseptics are lacking, so that the question cannot at present be answered authoritatively.

2. Taking the mixture in ginger ale, root beer or other flavored fluid will probably disguise the taste of salicylate sufficiently to please the most fastidious palate.

DIAGNOSIS OF SKIN DISTURBANCE WITH PRURITUS

To the Editor:—I am afflicted with a severe form of itching. Small slightly elevated papules, pinhead to three or four times that size, appear on different portions of the body with intense itching. They are not numerous, probably not more than a dozen on the body at any one time. Usually, if not always, there is little or no redness or other discoloration until irritated by scratching or rubbing, then they become much larger and more elevated but never coalesce. Sometimes three or four will appear after scratching, where there was only one before being so irritated. After scratching, the burning and itching are severe and last for half an hour or more. Gradually, then, they disappear unless the skin has been broken, in which case a tiny red spot will remain for several days. These papules are scattered all over the body indiscriminately but are somewhat more numerous about the upper aspects of the thigh, on the inner side. Sometimes the fingers or the palm of the hand will itch, and, if rubbed or scratched, numerous small elevations appear, which, if left alone, subside in a few hours. The hands always itch intensely when immersed in warm water. Sometimes the feet itch badly, too. I am seldom free of itching of some part of the body. I have taken alkalis to alkalize the urine, sodium phosphate and other laxatives, and have used phenol, sulphonated bitumen and weak solutions of tincture of iodine, separately and combined, locally. Nothing seems to have done any good. Please give diagnosis and treatment. Please omit name.

M.D., Georgia.

ANSWER.—The most probable diagnosis in this case is dermatitis herpetiformis of the papular type. Other disorders that must be ruled out are papular eczema, lichen urticatus, prurigo, and leukemia cutis. It would be important to know the duration of the disease, whether it is continuous or intermittent, and the distribution and grouping of the lesions. A blood count should be made to rule out leukemia. A high eosinophil count is in favor of the diagnosis of dermatitis herpetiformis. Treatment should consist of solution of potassium arsenite in increasing doses, a low protein diet, hydrotherapy, and antipruritic lotions. Ultraviolet exposures frequently relieve the itching. The condition is difficult to relieve permanently.

LACQUERS USED IN INDUSTRY

To the Editor:—As to the inquiry about lacquers used in industry (THE JOURNAL, July 14), note should be taken of the following: The lacquer used by the Japanese, and it is exported everywhere, is made from a vine, the leaves of which poison certain people almost exactly as does poison ivy. Newly imported lacquer-ware causes an acute itching and burning eruption in sensitive people.

An immense vine of this variety, brought from Japan by Prof. William P. Brooks of Amherst, Mass., covered the south side of the porch of the president's residence at the Massachusetts Agricultural College for many years and is probably still there. Several persons, to my knowledge, were poisoned by it some years ago. Its botanic name I cannot recall.

J. N. HALL, M.D., Denver.

TREATMENT AFTER TOXIC DOSE OF THYROID EXTRACT

To the Editor:—Kindly state the after-care and treatment of a toxic dose of thyroid extract, also its antidote, chemical and physiologic. I fail to find any literature on the subject. Please omit name.

M.D., New York.

ANSWER.—It is impossible to state the toxic dose of thyroid with precision, as this depends on the activity of the patient's thyroid gland. An individual on the verge of hyperthyroidism might easily be poisoned by a small additional dose of thyroid. Ordinarily, the initial dose of dried thyroid is 0.06 Gm. three times a day, and usually a 1 Gm. daily dose is not exceeded.

Unfortunately, no chemical or physical antidote or antagonist is known. If such were available, the treatment of hyperthyroidism would be much more satisfactory than it is at present.

BLOOD CHANGES IN PATIENT WITH CYSTITIS

To the Editor:—I recently had occasion to examine the blood of a patient under treatment for cystitis. Otherwise he appears to be in excellent health, working regularly as a clerk in the railway mail service. The blood examination showed a slight deficiency in red blood cells and hemoglobin. On looking at the stained film I was at once struck by the fact that practically all the neutrophil leukocytes had nuclei of the horseshoe, spectacle or transition type. Further study showed that only about 5 per cent of these leukocytes had as many as three lobules in the nuclei, and I found none with more than three. The average size of the cells in question was also smaller than usual—about 75 per cent the normal size, I should say. The differential count was about normal. I have never seen such blood, and would be obliged for your opinion as to its significance. I may add that later examinations have showed the same condition. Please omit name.

M.D., Minnesota.

ANSWER.—It seems rather improbable that a blood picture such as is described would be associated with a normal differential count and general good health except for a cystitis in the course of treatment. As the leukocytes appear to be small, the apparent shifting to the left may be due to overlapping of the segments of the neutrophils. This might be determined perhaps

by following closely the bends of the nucleus from the periphery inward. This phenomenon occurs especially in thick blood films in which the cells have had time to contract before drying, and also at the periphery of smears where the segments of injured cells apparently may unite.

WHITE SPOTS UNDER THE NAILS

To the Editor:—How would you treat the following condition: Small grayish spots appear under and about the middle of the finger nails. These spots coalesce and the finger nails become partially detached from their bed almost as far as the lunula. If the detached portion of a nail is cut away, the bed appears rough and dry. The Wasserman reaction of the man is negative. The scrapings under the microscope show nothing characteristic. The condition started in one of the nails ten years ago, following an attack of pneumonia. Now several of them are involved (both hands). There is no other skin or nail disease. The patient in general enjoys good health. Ormsby in his "Diseases of the Skin" describes a nail disease as onychoschizia. However, the description is apparently somewhat different. Ammoniated mercury rubs for the last six weeks have produced an appreciable change. The patient states that even without treatment in several months the nails may appear almost normal, but only temporarily. Please omit name.

M.D., California.

ANSWER.—There is probably no treatment that will affect this condition. White spots under the nails are usually due to trauma, but the whole chapter of nutritional disturbances of the nails has to be written and we know very little about it. This case is probably one of those obscure cases of some sort of nutritional disturbance of the nails which caused the formation of white spots and also separation of the plate from the nail bed. Usually they are entirely intractable to any sort of treatment.

EPIDERMOLYSIS BULLOSA

To the Editor:—I have under treatment a married woman, aged 20, who is troubled, when she attempts to walk the least distance (say three or or four blocks), by large blisters, which come on the bottom of the feet and on the toes. The least work with her hands, even using an electric iron or the vacuum cleaner, causes large blisters on the palms. The past history seems negative. The family history of this complaint runs through several generations. The condition is much worse in summer than in winter, practically incapacitating her during the summer months for the usual household duties. All of her family has had much treatment and no relief. Could you suggest a plan to follow? Please omit name.

M.D., Alabama.

ANSWER.—This is a case of epidermolysis bullosa appearing in several generations. Nothing definite is known about the etiology except that it is hereditary. Treatment has no influence on the course of the disease. Trauma must be avoided.

DERMATITIS IN WORKERS AT GAS STATIONS

To the Editor:—I have been coming into contact with a dermatitis peculiar to operators of gas stations who handle a lot of oil. Is there any connection between the two? What is the treatment?

J. H. BOYD, M.D., Trenton, Mich.

ANSWER.—"Gas stations" as mentioned is interpreted to refer to retail gasoline filling stations. Two types of dermatoses may arise in such work, although these lesions are not peculiar to such operators. The first of these is a dermatitis venenata due to the irritant action of the gasoline, benzene and similar substances used as motor fuels. The defatting of the skin by these chemicals is an important factor in causation of this condition. The common site of the dermatitis is the back of the hands and forearms. Less frequently, when these fuels are spilled on the clothing and allowed to remain, a severe acute condition supervenes. This acute condition begins with a marked hyperemia and is followed by a vesicular state. In operators the common skin lesion presented are the result of prolonged exposure and are characterized by a thickened, furrowed, desquamating skin with or without a few small furuncles due to secondary infection. If reexposure is prevented, these acute lesions quickly respond to treatment with wet dressings of aluminum acetate. Later and in the case of chronic types, the use of 10 per cent zinc oxide in olive oil has proved efficacious.

The second variety of dermatitis that has been observed is due to the lubricating oils. Furunculosis characterizes this type. Although these oils may be directly irritating in some degree, the prime factor in the production of this folliculitis is the lack of cleanliness in connection with the removal of the many hundreds of small metallic particles present in spent automobile oils, and the sealing of dirt and grime into the openings of the skin by this oil. The situation is further complicated by the use of gasoline, abrasive soaps and similar harmful agents in cleaning up. Occasionally, irritations may result from chemicals used to "pep-up" gasoline.

The usual case will respond in the absence of continued exposure to practically any mild treatment appropriate for furuncles. Wet dressings with epsom salt or aluminum acetate have proved efficacious. Preventive measures are most desirable. Operators should obtain careful cleansing of the skin every day. Mild soaps should be used and abrasive or any irritating soaps avoided. If necessary to use naphtha or gasoline to cut the grime, its use should be followed by thorough soap and water washing and then the application of small quantities of such bland fats as hydrous wool fat, oil of theobroma or olive oil.

Rarely resistant cases call for the use of x-ray treatment, search for foci of infection, or a change of occupation.

EYE INFECTIONS AMONG SAWDUST WORKERS

To the Editor:—I am surgeon for a door plant in this city, and a question has been put to me which I am unable to answer. There have been a large number of abscesses of the eye, and these men have had sawdust get in their eyes at work. These cases have been treated by an eye specialist, but as I handle all of the other cases, the men come to me for advice. These men all have been working in the veneer room, and the sawdust which they get in their eyes is from birch and is free from chemicals so far as known aside from some tannic acid. The logs are boiled in plain water, and some tannic acid gets into the wood from the bark. Can you tell me whether there is anything peculiar to this process or something inherent in the sawdust that might be responsible for so many of these abscesses?

BURTON CLARK, JR., M.D., Oshkosh, Wis.

ANSWER.—Sawdust from all wood is mechanically irritating to the skin and mucous membranes. "Styes" and furuncles have a high incidence in all woodworking factories in which exposure exists. However, in the case of maple and birch sawdusts there appear to be some reasons to believe that the frequency of harm is out of proportion to that to be expected from mechanical action alone. The chemistry of birch wood offers a possible but inconclusive explanation.

It has been found that the general sanitary conditions of the work place stand in close relation to the occurrence of skin and eye diseases from wood dusts. A higher frequency rate is to be anticipated if the humidity is excessive, if no suction is provided for the removal of sawdust, if washing facilities provided do not permit of cleaning up at least twice daily, and if plain glass spectacles (not goggles) are not provided and worn in order that the eyes may be shielded against the entry of wood dusts.

POSSIBLE USES OF DIATHERMY

To the Editor:—Is diathermy any good or recognized as a therapeutic agent for cholecystitis, fistula-in-ano or ischiorectal abscess?

HENRY BAER, M.D., Seattle.

ANSWER.—In instances of a mild cholecystitis, diathermy may be helpful by producing localized hyperemia with subsequent activation of the defensive cells and enhancing the carrying off of the inflammatory exudation. Any specific influence cannot be expected.

Anal fistulas and ischiorectal abscess may be successfully dealt with only by appropriate surgical intervention.

LENGTHENING OF ACHILLES TENDON IN CLUBFOOT

To the Editor:—The query in the Query and Minor Notes Department, THE JOURNAL, June 16, prompts me to send the following description of a method that I believe will solve the difficulty: As you know, all soft tissue, even bone, will yield to a continuing pressure. I apply two casts, without padding, to the limb. The leg cast extends from the ankle to the popliteal space. Extending above and below the fulness of the calf, the cast cannot slip up or down. The foot cast must encircle the heel and extend forward to the distal end of the metatarsals. The foot cast must compel movement of the tarsal bones as a whole, as any movement of the tarsal bones upon each other will destroy the efficiency of the device. Four metal plates are required. These are 2 inches long, one-half inch wide and one-sixteenth inch thick. Each plate has holes at both ends threaded for a 10-32 machine screw. Half inch 10-32 screws are attached at one end and a shorter piece of screw in the other end. These plates are embedded in the casts. The screw heads project free from the cast, while the shorter length is embedded in the cast, thus giving a better anchorage against side slip of the plate in the cast. Plates are embedded in each side of the foot cast as far forward as possible. The other two plates are embedded on the sides well down on the leg cast. Sufficient elastic bands, short of positive discomfort, are stretched between the screws on the corresponding sides of the foot and leg casts. This must be worn continuously. A moccasin can be worn over the foot, but the foot cast will disintegrate rapidly if it bears the body weight. Inversion or eversion of the foot can be corrected by varying the elastic pull on the two sides. An extra plate on the foot cast toward the heel with elastic to the leg screw may be needed in addition for this condition. One should replace the casts when necessary and be patient.

H. C. MASLAND, M.D., Philadelphia.

DETERMINING ACIDOSIS

To the Editor:—Apropos of your reply in Queries and Minor Notes (THE JOURNAL, July 14), to W. G. Jones of India, may I suggest a method, which is very easily done and which is accurate enough for the general run of cases, of determining the degree of acidosis. The method consists in determining the number of minims of tenth-normal sodium hydroxide necessary to neutralize or alkalize 10 cc. of urine, alcoholic solution of phenolphthalein being used as an indicator.

WILLIAM H. GOODSON, M.D., Liberty, Mo.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 4. Sec., Dr. Harry C. DeVighne, Juneau.

COLORADO: Denver, Oct. 2, 1928. Sec., Dr. Philip Work, 324 Metropolitan Bldg., Denver, Colo.

IDAHO: Boise, Oct. 2, 1928. Commissioner of Law Enforcement, Hon. F. E. Lukens, Boise, Idaho.

ILLINOIS: Chicago, Oct. 2-4, 1928. Supt. of Registration, Mr. V. C. Michels, Dept. of Regis. and Edu., Springfield, Ill.

MINNESOTA — Basic Science: Minneapolis, Oct. 2, 1928. Sec., Dr. E. T. Bell, 110 Anatomy Bldg., U. of Minn., Minneapolis, Minn.

MONTANA: Helena, Oct. 2-4, 1928. Sec., Dr. S. A. Cooney, Power Block, Helena, Mont.

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts 1 and 2, at all class A schools, Sept. 12-14. Exec. Sec., Mr. E. S. Elwood, N. E. Cor. 15th and Locust Sts., Philadelphia.

NEW HAMPSHIRE: Concord, Sept. 13-14. Sec., Dr. Charles Duncan, Concord, N. H.

NEW YORK: New York, Albany, Syracuse and Buffalo, Sept. 17-20. Chief of State Department of Education, Mr. H. J. Hamilton, Educational Bldg., Albany, N. Y.

OKLAHOMA: Oklahoma City, Sept. 11-12. Sec., Dr. J. M. Byrum, Shawnee, Okla.

PORTO RICO: San Juan, Sept. 4. Sec., Dr. D. A. Biascoechea, Box 804, San Juan.

WISCONSIN: Basic Science Board, Madison, Sept. 15. Sec., Prof. R. N. Bauer, 3410 Wisconsin Ave., Milwaukee.

Arkansas May Homeopathic Examination

Dr. Allison A. Pringle, secretary of the Homeopathic Board of Medical Examiners, reports the oral examination held at Little Rock, May 8, 1928. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. One candidate was examined, who passed, and one physician was licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Hering Medical College		(1912)	83.2

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Boston University School of Medicine		(1909)	Texas

District of Columbia April Examination

Dr. Edgar P. Copeland, secretary of the Board of Medical Supervisors of the District of Columbia, reports the oral and written examination held at Washington, April 10-12, 1928. The examination covered 16 subjects and included 80 questions. An average of 75 per cent was required to pass. There were 15 candidates examined and all passed. Six physicians were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
George Washington University Medical School		(1927)	86.9, 90.9
Georgetown University School of Medicine		(1927)	83.6, 88.9, 89.1, 90.1
Howard University School of Medicine		(1927)	76.5, 77.4, 79.6, 81.9
Johns Hopkins University School of Medicine		(1920)	91.7
Harvard University Medical School		(1915)	86.1
University of Tennessee College of Medicine		(1926)	83
Vanderbilt University School of Medicine		(1920)	89
Royal University of Budapest, Hungary		(1921)*	93.7

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University Medical School		(1919)	Virginia
Kentucky School of Medicine		(1891)	Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons		(1925)	Maryland
University of Pennsylvania School of Medicine		(1920)	Penna.
Univ. of West Tennessee Coll. of Med. and Surg.		(1910)	Oklahoma
University of Tomsk, Siberia		(1920)*	Ohio

* Verification of graduation in process.

Book Notices

LEHRBUCH DER KLINISCHEN UNTERSUCHUNGSMETHODEN FÜR STUDIERENDE UND PRAKTISCHE ÄRZTE. Band I. 1 Hälfte. Von Prof. Dr. H. H. Sahli, Direktor der medizinischen Universitätsklinik in Bern. Seventh edition. Paper. Price, 26 marks. Pp. 496, with 293 illustrations. Leipzig: Franz Deuticke, 1928.

LEHRBUCH DER KLINISCHEN UNTERSUCHUNGSMETHODEN FÜR STUDIERENDE UND PRAKTISCHE ÄRZTE. Band I. 2 Hälfte. Von Prof. Dr. H. Sahli, Direktor der medizinischen Universitätsklinik in Bern. Seventh edition. Paper. Price, 26 marks. Pp. 497-977, with 229 illustrations. Vienna: Franz Deuticke, 1928.

These two sections, which comprise the first volume of the seventh edition of Sahli's authoritative and well known work on "Methods of Clinical Diagnosis," have been extensively revised, the subject matter being brought down to date by the elimination of much that has become obsolete and by the inclusion of the more recent theories and methods of study. This work is a well rounded presentation of clinical investigation. The author decries the tendency of some authors and teachers to neglect the field of physical diagnosis, which he styles "the daily bread of the physician," and has in this edition extensively enlarged his sections along these lines; but he has not neglected to include the purely laboratory phases of diagnosis, which must be interpreted in the light of the physical conditions present. Throughout the work the author has attempted to correlate his observations on the basis of normal and pathologic physiology. In this volume there are sections on the general condition of the sick; build and nutritive condition; investigation of the skin; estimation of body temperature; respiration; the voice under pathologic conditions; cough; palpation, sphygmography and sphygmomanometry of the arterial pulse; visible movements of the vessels; arrhythmias; arterial sphygmomanometry (sphygmotonometry); measurement of pressure in the veins; measurement of capillary pressure; sphygmobolometry or dynamic study of the pulse; observations on the pathologic physiology of the circulation as a basis for the diagnostic use of the dynamic study of the pulse; percussion; auscultation; palpation of the lungs and the pleura; palpation and inspection of the cardiac region; inspection and palpation of the abdomen; physical diagnostic observations in individual valvular lesions, in congenital valvular lesions, in aortic aneurysm and in pericarditis; paradigms of physical conditions in the lungs and x-ray observations in the lungs; physical diagnosis of pulmonary tuberculosis; investigation of the stomach and stomach contents; investigation of the intestines, and investigation of the feces. Each of these sections is clearly and adequately presented. The subject matter is freely illustrated, the section on hemodynamics being especially well treated in this respect. In instances in which laboratory methods are applicable, as in the examination of the gastric and intestinal contents, the presentation has been made with special reference to the newer applications of physical chemistry. As the author states in his preface: "The book ought not to be a mere handbook but a textbook, that is, it is a book which must be read through and studied. Its study serves exactly the same end as didactic clinical instruction."

A HANDBOOK OF CLINICAL GYNECOLOGY AND OBSTETRICS. By Rae Thornton La Vake, A.B., M.D., F.A.C.S., Assistant Professor of Obstetrics and Gynecology, University of Minnesota. Cloth. Price, $4. Pp. 281, with 35 illustrations. St. Louis: C. V. Mosby Company, 1928.

The aim of this book is to present the important practical problems in gynecology and obstetrics. The book is divided into two parts, the first of which deals essentially with gynecology and the second with obstetrics. The importance of having a method in making an examination is especially emphasized by the author, but he overlooks systematization in the plan of his book. His chapters on pregnancy, pelvimetry, diagnosis of presentation and position by abdominal palpation and the rectal examination, and the postpartum examination, are placed in the gynecologic and not in the obstetric section. The subjects are admirably presented, the information is accurate, and the advice given is sound and practical except in a few instances. For sterility the author advises "a diet rich in all vitamins but especially vitamin A" (p. 101). He probably means vitamin E. Not many will agree that sterility can be successfully combated by a pluriglandular mixture of thyroid, thymus, anterior

pituitary, suprarenal gland, mammary gland and whole ovary. This smacks of the old time shotgun prescription. The author favors veratrum viride for reducing the blood pressure in cases of eclampsia, but few obstetricians use this drug nowadays. For elective cesarean sections and for "clean" cases the classic cesarean is preferred, but more and more obstetricians are performing the cervical operation. The style of writing is interesting and the illustrations are clear and instructive. The book should be in the hands of students and practitioners, for much of the information which it contains is not found in the average textbook.

PRINCIPES DE PHARMACODYNAMIE. Constitutions chimiques; propriétés physiologiques. Par L. Hugounenq, professeur à la Faculté de médecine de Lyon, et G. Florence, professeur agrégé à la Faculté de médecine de Lyon. Paper. Price, 40 francs. Pp. 390, with illustrations. Paris: Masson & Cie, 1928.

This volume is devoted to an interpretation of the relation of chemical structure of pharmacodynamic action. It is not just another textbook on pharmacology but is a presentation of the authors' views of the more fundamental bases of differential actions of chemicals and drugs. In the section on sensory nerves they discuss the various anesthetics from the standpoint of the relation of structure to properties. Likewise, relationships are given for drugs affecting motor endings; the natural and modified narcotics; drugs affecting the sympathetic and parasympathetic nervous systems; antipyretics; antiseptics, and mercurials, phenols, quinones, arsenicals, bismuth and war gases. To those interested in this phase of pharmacology this book will be a welcome addition, since in it are presented in a clear and pleasing manner the newer as well as the older views of the relationships of chemical constitution to functional alterations.

HANDBUCH DER NORMALEN UND PATHOLOGISCHEN PHYSIOLOGIE MIT BERÜCKSICHTIGUNG DER EXPERIMENTELLEN PHARMAKOLOGIE. Herausgegeben von A. Bethe, G. v. Bergmann, G. Embden, und A. Ellinger. Band I. A. Allgemeine Physiologie. Von K. Boresch, Ph. Broemser, usw., usw. Paper. Price, 64 marks. Pp. 748, with 119 illustrations. Berlin: Julius Springer, 1927.

This, the first volume of the series, is one of the last to appear. In its introduction it tells why the compilation of the Handbuch was undertaken and gives a general statement of the nature of the seventeen volumes that comprise the set. Dealing with subject matter fundamental to any accurate knowledge of the mechanism of the processes in biologic phenomena, this book is interesting and useful to the biologist but hardly to most practicing physicians.

OPERATIVE SURGERY. By J. Shelton Horsley, M.D., F.A.C.S., Attending Surgeon, St. Elizabeth's Hospital, Richmond, Va. Third edition. Cloth. Price, $15. Pp. 893, with 756 illustrations. St. Louis: C. V. Mosby Company, 1928.

This is essentially the same as the previous editions but has been thoroughly revised and brought down to date, including the more important operations that have been developed since 1924, the date of the previous edition. As in the previous editions, particular stress is laid on the preservation of physiologic function and the interpretation of the biologic processes that follow surgical operations. The author has included a new chapter dealing with cicatricial contraction, a subject which has been of particular interest to him in recent years and on which he has contributed to the literature. Moved by the distressing results of excessive cicatricial contraction following plastic surgery of the face and the even more serious results in operations on viscera or ducts, he has attempted to aid the surgeon to avoid these unfortunate occurrences by presenting the causes and how to avoid them. There have been many other additions and changes. These include the experimental work of John H. Horsley, Jr., on ligation of arteries in continuity and the experimental work of Mann and Williamson and of C. B. Morton on peptic ulcers; a summary of the recent work of Gye and Barnard and Blair Bell on cancer and a description of Bell's colloidal lead treatment; a new method of partial gastrectomy, a modification of the Billroth I operation, the technic of Hofmeister's modification of the Billroth II operation and of total gastrectomy; the operation for disconnecting a gastroenterostomy; the methods of lateral intestinal anastomosis and of gastro-enterostomy without clamps; a review of recent work on the physiology of the stomach, and a comment on the bearings of this new knowledge on gastro-intestinal surgery. Some of the newer operations described include the operation of Dandy and Singleton for tic douloureux of the ninth nerve, the radical phrenicotomy of Felix, the operations of Cutler and of Beck on the heart, the cardiolysis of Marvin and Harvey, the operations of Sauerbruch and of Brauer for thoracoplasty, the operation of Wheeldon for bunion, the operation of McGuire for hypospadias, a new technic for nephropexy, the operation of Dodson for ureteral stricture, the Brown operation for cleft palate, the operation of Davis for transplantation of whole skin, and the face-lifting operations of Hunt and Miller. This edition, as did its predecessors, continues to be one of the preeminent single volumes on operative surgery, being not merely a catalogue of operations with details of technic but also a presentation of surgical operative practice based on a large experience and a thorough familiarity with the literature. This volume, together with Ashhurst's single volume on the Principles of Surgery, constitute two single-volume works on surgery which are of great value to students, practitioners and surgeons.

GONOCOCCAL URETHRITIS IN THE MALE. For Practitioners. By P. S. Pelouze, M.D., Associate in Urology and Assistant Genito-Urinary Surgeon at the University of Pennsylvania. Cloth. Price, $5. Pp. 357, with 78 illustrations. Philadelphia: W. B. Saunders Company, 1928.

In this book, the author presents many of his own views about gonorrhea. Some of his contentions require scientific proof and vary from the generally accepted knowledge. He believes that the symptoms of gonorrhea are not due to the living gonococcus but are the effect of the destruction of the gonococcus. In the latter process, endotoxin is liberated which produces the phenomena of the disease and he calls this product gonotoxin. The author presents his own work on the gonophage, which is similar to the bacteriophage, described for other bacteria. He has found the gonophage in cultures that have undergone autolysis, has isolated it and has produced destruction of gonococci with it. He has presented, as few authors have, the proper conception that gonorrhea is not cured by local antiseptics but by the local and systemic reaction to the infection. Many urologists will question the possibility of preventing a posterior urethritis. It is usually considered only a part of the disease. In the author's experience, posterior urethritis develops in only 15 per cent of cases. He brings out one important point which those who are interested in the subject will appreciate; namely, the ability of the body to produce antibodies. This faculty is the final reason for recovery from the infection. Alcohol is interdicted not so much because it is an irritant to the genito-urinary tract as that it prevents antibody formation. In treatment, the author does not curtail the diet as is usually recommended, considering such restriction as of no value, merely forbidding alcohol and sexual excitement. He considers permanganate irrigations the most valuable form of local treatment. Frequent irrigations are considered harmful because they devitalize the tissues and hence Pelouze recommends only three injections daily in acute gonorrhea. He considers prostatitis fairly common but believes that infections of the seminal vesicles are rare. Careful study by the urologist or the general practitioner will readily show that the author is overlooking many cases of seminal vesiculitis. They occur quite as frequently as prostatic infections. In the determination of the cure of gonorrhea, the author has omitted the all important examination of the semen. Altogether, it is refreshing to get an entirely different point of view of this important subject. The last word is still to be said on the treatment of gonorrhea. Little advance has been made in the last fifty years. No doubt some new conception of treatment will evolve in the future. The author has given a good presentation of his views, which could possibly have been as well covered in a shorter treatise.

FRACTURAS. Tomo I. Por Laureano Olivares, catedrático de patologia y clinica quirúrgicas, en la Universidad Central. Cloth. Pp. 407, with 470 illustrations. Madrid: Javier Morata, 1928.

This book on the common treatment for fractures is planned to help the general practitioner. The author describes bone anatomy, but the most important chapters are those on practical treatment. The book contains many roentgenograms from personal cases and from cases observed by colleagues. References from German and American physicians are many. The author does not consider open or surgical treatment.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits. Books listed in this department are not available for lending. Any information concerning them will be supplied on request.

MEDIZINISCHE PRAXIS: Sammlung für ärztliche Fortbildung. Herausgegeben von Prof. Dr. L. R. Grote, Leitender Arzt von Dr. Lahmanns Sanatorium Dresden-Weisser Hirsch, Prof. Dr. A. Fromme, Leitender Arzt der chirurgischen Abteilung des Stadtkrankenhauses Friedrichstadt Dresden, und Prof. Dr. K. Warnekros, Direktor der staatlichen Frauenklinik zu Dresden. Band IV: Die Erkrankungen der Gallenwege und ihre chirurgische Behandlung. Von Prof. Dr. Werner Körte, Geh. Sanitätsrat in Berlin. Paper. Price, 10 marks. Pp. 183, with 26 illustrations. Dresden: Theodor Steinkopff, 1928.

Part of a German system, this section dealing with surgery of the biliary tract.

LABORATORY MANUAL OF PHYSIOLOGICAL CHEMISTRY. By Meyer Bodansky, Associate Professor of Biological Chemistry, and Marion S. Fay, Adjunct Professor of Biological Chemistry, School of Medicine, University of Texas. Cloth. Price, $2 net. Pp. 234, with 9 illustrations. New York: John Wiley & Sons, Inc., 1928.

Reasonably priced interleaved useful guide to laboratory technic.

HANDBUCH DER MIKROSKOPISCHEN ANATOMIE DES MENSCHEN. Herausgegeben von Wilhelm v. Möllendorff. Band II. Die Gewebe. Teil 1. Epithel- und Drüsengewebe. Bindegewebe und Blutbildende Gewebe. Blut. Von J. Brodersen, A. Maximow, und J. Schaffer. Paper. Price, 135 marks. Pp. 703, with 306 illustrations. Berlin: Julius Springer, 1927.

Part of a German system of histology.

DISEASES OF THE SKIN. By Richard L. Sutton, M.D., Sc.D., LL.D., Professor of Diseases of the Skin, University of Kansas School of Medicine. Seventh edition. Cloth. Price, $12. Pp. 1394, with 1248 illustrations. St. Louis: C. V. Mosby Company, 1928.

New and revised edition of a standard dermatologic textbook.

STORY OF ELECTRICITY AND A CHRONOLOGY OF ELECTRICITY AND ELECTROTHERAPEUTICS. By Herman Goodman, B.S., M.D. With an introduction by Victor Robinson, M.D. Boards. Price, $1.50. Pp. 62, with 12 portraits. New York: Medical Life Press, 1928.

Brief historical introduction to electrotherapeutics.

THE COÖRDINATION OF REFRACTION WITH SPECTACLE AND EYE GLASS FITTING. The System of Base Line Refraction Employing a New Model of the Standard Type of Trial Frames. By Sidney L. Olsho, M.D., Instructor in Ophthalmology, Jefferson Medical College of Philadelphia. Cloth. Price, $2. Pp. 42, with 19 illustrations. Philadelphia: Pelham Publishing Company, 1928.

SYSTEMIC INFECTIONS: Their Diagnosis and Treatment. By A. Knyvett Gordon, M.B., B.C., B.A., Medical Superintendent of the Virol Pathological Research Laboratories. Cloth. Price, $4 net. Pp. 176, with 7 illustrations. New York: William Wood & Company, 1928.

A MANUAL OF SURGICAL ANATOMY. By Charles R. Whittaker, F.R.C.S., F.R.S.E., Assistant Lecturer on Anatomy, Surgeons' Hall, Edinburgh. Fourth edition. Cloth. Price, $5 net. Pp. 471, with illustrations. New York: William Wood & Company, 1928.

FIXATION ATMOSPHERIC NITROGEN. By Frank A. Ernst, Fixed Nitrogen Research Laboratory, U. S. Dept. Agric. Industrial Chemical Monographs. Cloth. Price, $2.50. Pp. 154, with illustrations. New York: D. Van Nostrand Company, Inc., 1928.

BACTERIOLOGY FOR NURSES. By Charles F. Carter, B.S., M.D., Director, Terrell-Carter Laboratory, Dallas, Texas. Cloth. Price, $2.25. Pp. 213, with 44 illustrations. St. Louis: C. V. Mosby Company, 1928.

HOW TO COOK FOR CHILDREN. A Cook Book for Mothers. By Estelle M. Reilly. With an introduction by Dr. Charles Gilmore Kerley. Cloth. Price, $1.50. Pp. 250. New York: G. P. Putnam's Sons, 1927.

THE PRESCRIBING OF SPECTACLES. By Archibald Stanley Percival, M.A. M.B., B.C. Third edition. Cloth. Price, $5 net. Pp. 239, with 29 illustrations. New York: William Wood & Company, 1928.

A TALE OF SOAP AND WATER. The Historical Progress of Cleanliness. By Grace T. Hallock. Paper. Gratis for school use. Pp. 96, with illustrations. New York: Cleanliness Institute, 1928.

METHODS AND PROBLEMS OF MEDICAL EDUCATION. (NINTH SERIES). Paper. Gratis. Pp. 386, with illustrations. New York: Rockefeller Foundation, 1928.

ANNUAL REPORT OF SHANGHAI MUNICIPAL COUNCIL, PUBLIC HEALTH DEPARTMENT, 1927. Paper. Pp. 88. Shanghai 1928.

Medicolegal

Contract with Father to Pay for Services Not Shown

(Shirley v. Madsen (S. D.), 216 N. W. R. 601)

The Supreme Court of South Dakota, in affirming a judgment dismissing this action, says that it was brought by a physician and surgeon to recover from a father for services rendered an adult daughter of the latter who was engaged in teaching school and not living with her father. In order to maintain this action, it was necessary for the plaintiff to show a promise, either express or implied, on the part of the defendant, to pay for the services to be rendered, and such promise must have been made before the service was rendered, because, if it were not made until after the liability had been incurred, it would be a promise to pay the debt of another, and could be evidenced only by a writing in some form. The testimony of the plaintiff did not warrant the inference that the defendant intended him to and he did understand that the defendant would pay for the services. The suggestion made by the plaintiff to the daughter that before he operated on her he would want to talk with her father did not follow the disclosure by the daughter that she was without funds, but preceded it. The plaintiff testified that after he had made an examination he told the daughter that she should be operated on, and told her that before he operated he would want to talk with her father. It was then that she told him that she had no money to pay her bills. Up to that time there was nothing to indicate that the patient did not have the money to pay for any service that might be rendered by the plaintiff. It was true that the plaintiff's request to see the father was repeated after he knew that the patient did not have any money, but there was nothing to indicate that the request was induced by that fact; and it was certain that the first request was not induced by such fact.

Viewed in the most favorable light, the most that could be said of the plaintiff's testimony was that the defendant acquiesced in the performance of the operation by the plaintiff. At first he suggested that the operation be performed elsewhere, but, because his daughter preferred to have the plaintiff do it, the defendant withdrew his objection and told the plaintiff to go ahead and do it. Considerable stress was placed on the fact that the defendant paid the hospital bill, and when asked to pay the plaintiff's bill said that just then he did not have the money to pay the bill, and that it would be an accommodation to him if the bill could be allowed to run until the following fall. That did not amount to a promise to pay the bill, and, if it did, it was a mere voluntary verbal promise, without consideration, to pay a preexisting debt of another, and not binding unless put in writing. And, in the absence of an express promise, before the services were performed, to pay for them, the defendant could pay the hospital bill without obligating himself to pay for the physician's services.

What this court believes to be a leading case on this subject is *Crane* v. *Baudouine*, 55 N. Y. 256. In that case it is said that, in order to hold the father liable for medical services performed for an adult daughter, it is necessary to show a contract, express or implied, to pay for such services; that the acquiescence on the part of the father that the services be performed for the daughter for whom he is not bound to furnish such service is not equivalent to an acknowledgment that he will be liable for the payment for such service. The doctrine announced in that case has been approved and followed in half a dozen or more cases. It seems to be the well settled rule that, in order to hold a party liable for medical services performed for the benefit of one for whom such party is not legally bound to furnish such service, there must be a contract, express or implied, to that effect. It is not necessary that the amount or value of such services must be agreed on. A promise to pay the quantum meruit of such services (as much as they are worth) is sufficient. It would have been a simple matter in this case for the plaintiff, in the conversation he had with the defendant before he performed

the operation, to ascertain whether the defendant intended to pay the bill.

On the trial the plaintiff was asked what was his object at that time in demanding that the father come and talk to him; and why it was that he demanded that he talk to the father at that time. There was no error in excluding those questions. Nor was a question competent which asked him to state whether or not he would have performed an operation on the defendant's daughter if it had not been his understanding that the defendant was going to pay for it. The plaintiff had the right to go into the conversation with the defendant in the minutest detail. If his object was to secure an agreement to pay for the service, he should have so stated, or at least said enough so that object might be inferred from what he said. Such inference was to be drawn by the jury from what was actually said, rather than by the plaintiff from what he might have had in his mind and did not say.

Need Not Submit to Operation for Fracture of Skull

(Glotfelter Erection Co. v. Smith (Tenn.), 300 S. W. R. 6)

The Supreme Court of Tennessee, in affirming a decree awarding compensation under the workmen's compensation act for injuries sustained by claimant Smith, says that the reasonableness of a refusal to submit to an operation is a question of fact. The physician who attended the claimant testified that the latter was suffering from a depressed fracture of the skull in the right posterior parietal region. There was a laceration on the claimant's head, showing that he had received a fall, probably landing on his head, and that in thus falling he had driven a rock into his skull. The rock pushed a portion of the skull about the size of a quarter into and on the covering of the brain. Symptoms evidenced by a jerking condition on the right side soon indicated that there was a pressure on the brain resulting from the fracture. The physician said that he recommended to the claimant, after all danger of infection from the laceration had passed, that an operation be performed to raise up that portion of the skull which was resting on the covering of the brain; that it was possible to remove entirely this portion of the skull, because the brain covering was composed of several layers of tissue, which together with the scalp and hair would afford sufficient protection; that it was also possible by operation to raise this portion of the skull back to its normal place and thus let it form a union with the other portion of the skull, and that this operation was classed as a major operation, and was a serious one. The physician went on to state that he recommended and insisted that the operation be performed; that the employer had authorized him to perform it, and had informed him that it would pay for his services, and that such a surgical operation was the only probable cure for the claimant's injury and would probably restore him to his former earning capacity, but that it was by no means certain. On cross-examination the physician said that at the time he offered to perform the operation described he regarded it as a dangerous operation, because any operation on the skull and brain is dangerous. In an affidavit filed on a motion for a new trial he stated that at the time he proposed to operate the claimant was in a weakened and run down condition, and was not a good subject for operation. Accepting the testimony of the physician as true, the supreme court holds that the conclusion of the trial court was abundantly supported.

Damages Not Result of Physician's Alleged Negligence

(Stewart v. Wright. (Kan.), 261 Pac. R. 581)

The Supreme Court of Kansas says that the plaintiff physician sued to recover $50 on an account for professional services in treating the defendant's son, about 9 years old. The defendant denied liability, alleging that he was damaged $117.98 by the plaintiff's malpratice. The jury returned a verdict for the defendant for $69.40. It appeared that the boy had been thrown from a horse and had his arm severely injured at the elbow, which was dislocated. He was taken to the plaintiff's office. The plaintiff examined the injury, set the elbow and bandaged it with splints, and the boy was taken home. The plaintiff either saw the boy or talked with one of his parents each day for several days, and then concluded that he ought to take a roentgenogram of the elbow. He had a roentgen-ray machine in his office, and the boy was again brought there. The roentgenograms taken showed that there was something holding the joint open. The plaintiff was satisfied that there was a piece of the olecranon process back in the joint holding the bones apart, and he advised that the boy be taken to a hospital, where he was treated and a good recovery obtained. The damages proved were the expense of going to the hospital—carfare, hotel bills, the expense at the hospital, the surgeon's fee there, and the time of the boy's father in going with him. The negligence relied on, and which the jury found, was that the plaintiff did not use his roentgen-ray machine to determine the extent of the injury, at, as the court presumes, the first treatment, instead of several days later.

Let the court assume, without deciding, that this was negligence. How would that have reduced the expense of going to the hospital? There was no contention that the plaintiff was negligent in advising that the boy be taken to the hospital. The evidence of the hospital surgeon was that the injury was no more difficult to treat at the hospital by reason of the fact that the patient did not reach the hospital until about ten days after the injury. Had the plaintiff used the roentgen ray at the first treatment, and discovered then, as he did discover when he used it, that he was not equipped to treat the case because of lack of proper facilities and had advised that the patient be taken to the hospital, and had this been done, the carfare, time and other expenses would have been the same. Hence the conclusion seems irresistable that the damages sought to be proved were not caused by the negligence of the plaintiff in failing to use the roentgen ray earlier, if that was in fact negligence. Therefore the judgment of the court below is reversed, with directions to sustain the plaintiff's demurrer to the defendant's evidence in support of his claim for damages.

Society Proceedings

COMING MEETINGS

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Toronto, September 10-12. Dr. James E. Davis, 1825 Geddes Avenue, Ann Arbor, Mich., Secretary.

American College of Physical Therapy, Chicago, October 8-13. Dr. R. W. Fouts, Medical Arts Building, Omaha, Secretary.

American College of Surgeons, Boston, October 8-12. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.

American Electrotherapeutic Association, Boston, Sept. 10-14. Dr. Richard Kovacs, 223 East 68th Street, New York, Secretary.

American Roentgen Ray Society, Kansas City, Mo., September 24-29. Dr. John T. Murphy, 421 Michigan Street, Toledo, Ohio, Secretary.

Association of Military Surgeons of the United States, Baltimore, October 4-6. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Sec'y.

Colorado State Medical Society, Colorado Springs, Sept. 11-13. Dr. F. B. Stephenson, Metropolitan Building, Denver, Secretary.

Delaware, Medical Society of, Rehoboth, Sept. 11-12. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.

Idaho State Medical Association, Yellowstone Park, August 27-29. Dr. J. N. Davis, Kimberly, Secretary.

Indiana State Medical Association, Gary, September 26-28. Mr. T. A. Hendricks, Hume-Mansur Building, Indianapolis, Executive Secretary.

Kentucky State Medical Association, Richmond, Sept. 10-13. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Medical Library Association, New York, September 5-7. Miss Sue Biethan, Medical Librarian, University of Michigan, Ann Arbor, Sec'y.

Michigan State Medical Society, Detroit, September 26-28. Dr. F. C. Warnshuis, G. R. National Bank Building, Grand Rapids, Secretary.

Montana, Medical Association of, Yellowstone Park, August 27-29. Dr. E. G. Balsam, 222 Hart-Albin Building, Billings, Secretary.

Nevada State Medical Association, Reno, September 21-22. Dr. H. J. Brown, Box 688, Reno, Secretary.

New York and New England Association of Railway Surgeons, New York, October 12-13. Dr. Brooks W. McCuen, 423 James Street, Syracuse, New York, Secretary.

Oregon State Medical Society, Portland, September 20-22. Dr. F. D. Stricker, 410 Taylor Street, Portland, Secretary.

Pacific Association of Railway Surgeons, San Francisco, August 24-25. Dr. W. T. Cummins, Southern Pacific General Hospital, San Francisco, Secretary.

Pennsylvania, Medical Society of the State of, Allentown, October 1-4. Dr. W. F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Vermont State Medical Society, Burlington, October 11-12. Dr. William G. Ricker, 29 Main Street, St. Johnsbury, Secretary.

Washington State Medical Association, Seattle, August 27-30. Dr. Curtis H. Thomson, 508 Cobb Building, Seattle, Secretary.

Western Branch of the American Urological Association, San Francisco-Del Monte, September 13-15. Dr. W. E. Stevens, Flood Building, San Francisco, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Sept. 11-14. Mr. J. G. Crownhart, 153 East Wells Street, Milwaukee, Executive Secretary.

Wyoming State Medical Society, Yellowstone Park, August 27-29. Dr. Earl Whedon, 50 North Main Street, Sheridan, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Diseases of Children, Chicago

35: 955-1156 (June) 1928

*Etiology of Epidemic of Enteritis Associated with Mastoiditis in Infants. G. F. Dick, G. H. Dick and J. L. Williams, Evanston, Ill.—p. 955.
*Sex Factor in Infantile Tetany. H. Bakwin and R. M. Bakwin, New York.—p. 964.
*Metabolism of Undernourished Children: V. Protein Metabolism. C. C. Wang, J. E. Hawks and B. B. Hays, Chicago.—p. 968.
Scarlet Fever: VI. Relation Between Loss of Skin Sensitivity to Toxin and Development of Antitoxic Immunity During Artificial Immunization. J. V. Cooke, St. Louis.—p. 974.
Id.: VII. Course of Development of Immunity in Scarlet Fever. J. V. Cooke, St. Louis.—p. 983.
Id.: VIII. Anaphylactic Factor in Scarlet Fever. J. V. Cooke, St. Louis.—p. 991.
Hearts of Normal Children: III. Electrocardiographic Records. E. M. Lincoln and G. H. B. Nicolson, New York.—p. 1001.
*Prevention and Modification of Measles with Antimeasles Diplococcus Goat Serum. A. L. Hoyne and S. Peacock, Chicago.—p. 1021.
*Congenital Cyst of Lung. W. W. Swanson, E. S. Platou and W. Schiller, Minneapolis.—p. 1024.
*Granulocytic Aplasia of Bone Marrow Following Use of Arsenic. R. Y. Wheelihan, Milwaukee.—p. 1032.
Sheep Dye Poisoning: Three Cases. J. Aikman, Rochester, N. Y.—p. 1038.
*Agranulocytic Angina. H. L. Dwyer and F. C. Helwig, Kansas City. —p. 1041.
Survey of Communicable Disease Situation in Chicago. J. R. Gerstley and Others, Chicago.—p. 1048.
Lucillus Faventinus Victorius?—1520; George Khufner, Jr. ?—? J. Ruhräh, Baltimore.—p. 1106.

Etiology of Enteritis Associated with Mastoiditis.—The Dicks and Williams report on an epidemic of enteritis associated with mastoiditis in infants which was primarily an intestinal infection, as shown by the results of bacteriologic examinations in which the Morgan dysentery bacillus was found and by the fact that the epidemic was controlled through discarding all foods which were not fresh and which could not be boiled and through the adoption of measures to prevent the transfer of intestinal bacteria by the fingers of nurses. It has been demonstrated that the occurrence of mastoiditis as well as the enteritis to which it was secondary may be prevented by prophylactic measures; that the morbidity from all causes has been reduced to a minimum is shown by the fact that no instance of sickness of any kind occurred in the institution in the two and a half months following the adoption of the technic described.

Sex Factor in Infantile Tetany.—In a series of 136 patients with infantile tetany reported on by the Bakwins, boys were affected more than twice as often as girls (93:43). The disease is apt to be more severe in boys than in girls. The nine patients whose death was in large part due to tetany were boys. The more frequent occurrence of tetany in boys indicates a difference in the calcium regulating mechanism of the two sexes.

Metabolism of Undernourished Children.—In a study of the nitrogen metabolism of ten normal and thirty-nine underweight children, Wang et al. found that while the percentage of absorption was practically the same for the normal and the undernourished children, the percentage of nitrogen retained in the body as well as the nitrogen retention per kilogram of body weight increased with the degree of undernutrition. It is suggested that the protein requirement of underweight children should be computed according to the standard, rather than to the actual, weight of the child.

Serum Therapy of Measles.—Forty-three persons with a negative history for measles received immune goat serum within four days of exposure to measles and did not contract the disease. Thirty-eight children exposed to measles were given immune goat serum five days or more after exposure, and all contracted the disease. In most instances (81.5 per cent), however, the disease appeared to be modified. Only two patients (5 per cent) had any complications, and none died. Twenty-seven children who did not receive goat serum contracted measles. Eleven (40 per cent) developed complications and two (7 per cent) died. On the basis of these observations, Hoyne and Peacock conclude that: (*a*) Tunnicliff's immune goat serum is of undoubted value as a prophylactic against measles when administered early, and (*b*) it may exert a modifying influence on the course of the disease if given at any time during the incubative period.

Congenital Cyst of Lung.—Swanson et al. report a case of congenital cyst of the right lung in a 10 weeks old infant which originated from a bronchus.

Granulocytic Aplasia Following Use of Arsenic.—The case reported by Wheelihan is of interest because of the sudden onset following the prolonged use of potassium arsenite, the high fever, the enlarged liver and spleen, the lesions of the mouth, and, particularly, the changes in the blood picture with subsequent recovery. It was found that 625 minims of potassium arsenite (0.41 Gm., or 6 grains of arsenic trioxide) produced granulocytic aplasia of the bone marrow in a child, aged 9.

Agranulocytic Angina.—A boy, aged 6 years, while under observation for anemia with enlargement of the salivary glands and spleen, developed Vincent's angina, leukopenia and a loss of polymorphonuclear cells in the blood. Dwyer and Helwig found evidence of streptococcic septicemia at necropsy; bacterial emboli had invaded the heart muscle, spleen, liver and kidneys. Before the patient died, the neutrophils completely disappeared from the blood and were not found in the tissue reactions in the inflammatory zones at necropsy. There was no extensive lymphocytic or myeloid cell infiltration of the organs such as occurs in leukemia, and consequently no evidence to support the hypothesis that this disease was a primary disturbance of the myelogenous marrow tissues, and that the inflammatory condition was secondary as a result of lack of resistance caused by the absence of granulocytes.

American J. Hygiene, Baltimore

8: 477-648 (July) 1928

Respiratory Immunity in Rabbits. IV. Permeability of Upper Respiratory Mucous Membrane for Bacteria and Their Products. C. G. Bull and C. M. McKee, Baltimore.—p. 477.
Id.: V. Effect of Active Immunization of Rabbits to Bacterium Lepisepticum on Development of Snuffles or Carrier State. G. H. Bailey and S. C. Cheng, Baltimore.—p. 485.
Infection of Conjunctiva and Cornea of Guinea-Pigs Following Application of Virulent Diphtheria Bacilli. M. Beattie, Berkeley, Calif. —p. 502.
Susceptibility, Resistance and Acquired Immunity to Infection with Strongyloides Stercoralis (Nematoda) in Dogs and Cats. J. H. Sandground, Boston.—p. 507.
Variability in Nyssorhynchus Group of Genus Anopheles. N. C. Davis. —p. 539.
Effects of Drugs on Bird Malaria. R. Hegner, E. H. Shaw, Jr., and R. D. Manwell, Baltimore.—p. 564.
Absorption of Chemical Compounds by Red Blood Corpuscles: Therapeutic Significance in Treatment of Bird Malaria. E. H. Shaw, Jr., Baltimore.—p. 583.
Passage of Living Bacteria Through Wall of Intestine and Influence of Diet and Climate on Intestinal Autoinfection. L. Arnold, Chicago. —p. 604.
Variations in Age Distributions of Mortality and Morbidity from Diphtheria, Scarlet Fever and Certain Other Diseases in Relation to Latitude. J. A. Doull, Baltimore.—p. 633.

Amer. J. Roentgenology & Rad. Therapy, New York

19: 513-606 (June) 1928

Roentgen-Ray Diagnosis of Pulmonary Infections with Friedländer Bacillus. K. Kornblum, Philadelphia.—p. 513.
Roentgenogram in Mastoid Disease. H. K. Taylor, New York.—p. 522.
Congenital Absence of Femur, Patella, Tarsal Scaphoid and Ischium Associated with Other Abnormalities: Case. A. R. Shands, Jr., Washington, D. C.—p. 531.
Toxic Goiter: Its Diagnosis and Treatment: Roentgen and Radium Treatment. J. T. Stevens, Montclair, N. J.—p. 539.
Treatment of Hyperthyroidism: Consideration of Methods Now in Use. E. Rose, Philadelphia.—p. 546.
Radiation Risks of Roentgenologist: Attempt to Measure Quantity of Roentgen Rays Used in Diagnosis and to Assess Dangers. A. E. Barclay and S. Cox, Manchester, England.—p. 551.

Annals of Otology, Rhinol. & Laryngol., St. Louis

37: 419-738 (June) 1928

Radical Mastoid Operations. L. E. White, Boston.—p. 419.
Magnetic Aid in Bronchoscopic and Esophagoscopic Removal of Foreign Bodies from Air and Food Passages. C. Jackson, Philadelphia.—p. 435.
Glossopharyngeal Neuralgia: Five Cases. F. K. Hansel, St. Louis.—p. 440.
Pathology in Twenty-Three External Frontal Ethmosphenoid Operations. W. L. Simpson and R. Harris, Memphis, Tenn.—p. 452.
Infection of Sphenoid Sinus. R. A. Barlow, Madison, Wis.—p. 477.
Fracture of Facial Bones Involving Nasal Accessory Sinuses. J. B. Naftzger, Sioux City, Iowa.—p. 486.
Osteomyelitis of Frontal Bone: Two Cured Cases. J. J. Shea, Memphis, Tenn.—p. 500.
Osteomyelitis of Infantile Superior Maxilla. J. J. Shea, Memphis, Tenn.—p. 509.
Localization and Drainage of Brain Abscesses of Otitic Origin. J. B. Potts, Omaha.—p. 513.
Experience with New Mastoid Flap and Drainage (Ellis). B. N. Colver, Battle Creek, Mich.—p. 533.
Perforations of Esophagus. M. C. Myerson, New York.—p. 545.
Postoperative Atelectasis: Bronchoscopic Observations on Massive Collapse of Lungs. G. Tucker, Philadelphia.—p. 569.
Adenoid Deafness. F. P. Sturm, Leigh, Lancashire, England.—p. 579.
Paranasal Sinuses as Sources of Infection. V. V. Wood, St. Louis.—p. 592.
Effect of Food Elements on Special Senses. W. Western, Columbia, S. C.—p. 618.
Physiology of Larynx. W. V. Mullin, Cleveland.—p. 627.
Conservative Surgical Treatment of Chronic Maxillary Sinusitis. J. C. Tucker, Beatrice, Neb.—p. 631.
Sinus Cases Presenting Cranial Symptoms. E. A. Looper, Baltimore.—p. 634.
Cytologic Examination in Diagnosis of Infection in Nasal Accessory Sinuses. E. C. Sewall, San Francisco.—p. 642.
Quality Hearing. D. W. Drury and D. E. Gallivan, Boston.—p. 661.
Pulmonary Hemorrhage in Cases of Pulmonary Tuberculosis, Chronic Bronchiectasis and Mitral Stenosis. P. P. Vinson, Rochester, Minn.—p. 675.
Discussion of Some Clinical Problems of Chronic Sinusitis. C. W. Pond, Pocatello, Idaho.—p. 677.
One Opaque and Two Nonopaque Foreign Bodies in Right Main Bronchus. E. G. Gill, Roanoke, Va.—p. 691.
So-Called Ionization Treatment of Otitis Media: Physicochemical Aspects. H. M. Stevenson, Fort Worth, Texas.—p. 694.
Angina Ludovici and Kindred Affections. H. S. Muckleston, Los Angeles.—p. 711.
Spontaneous Hemorrhage from Tonsil: Case. V. Dabney, Washington, D. C.—p. 736.

Archives of Internal Medicine, Chicago

42: 1-150 (July) 1928

*Thyroid Disease. W. B. Cooksey and M. S. Rosenblatt, Detroit.—p. 1.
*Metrazol: Effects on Cardiorespiratory Mechanism. M. H. Barker and S. A. Levine, Boston.—p. 14.
*Electrocardiogram in Diphtheria. M. H. Nathanson, Minneapolis.—p. 23.
Basal Metabolism: III. Influence of Work with Special Reference to Thyroid Gland. J. H. Smith, Richmond, Va.—p. 47.
*Tolerance for Quinine in Exophthalmic Goiter. I. Bram, Philadelphia.—p. 53.
Experimental Hypotension in Rabbits. T. L. Squier and C. T. Bach, Milwaukee.—p. 56.
*Utilization of Jerusalem Artichokes by Patient with Diabetes. T. M. Carpenter and H. F. Root, Boston.—p. 64.
*Disease of Coronary Arteries: Without Gross Cardiac Hypertrophy. H. R. Miller, New York, and M. M. Weiss, Louisville, Ky.—p. 74.
Alkalosis in Patients with Peptic Ulcer. W. E. Gatewood, Portland, Ore., and Others.—p. 79.
Total Chloride Concentration and Acidity of Gastric Contents. F. D. Gorham, C. M. Stroud and M. Huffman, St. Louis.—p. 106.
*Gastric Secretion: Its Alteration by Use of Atropine, Epinephrine and Pilocarpine. A. M. Altshuler, Detroit.—p. 117.
Area of Body Surface and Measurements of Normal Heart. R. W. Kissane, Columbus, Ohio.—p. 135.

Thyroid Disease.—Cooksey and Rosenblatt assert that their experiments have shown that hypersecretion of the thyroid in exophthalmic goiter and other clinical thyrotoxic cases seems definitely proved.

Effects of Metrazol.—In a series of experiments on cats Barker and Levine found that metrazol did not have any beneficial effect on the cardiorespiratory mechanism. This was true in the normal animal and in states of depression produced by quinidine, hemorrhage and acid intoxication.

Electrocardiogram in Diphtheria.—In fifteen severe and moderately severe cases of diphtheria reported on by Nathanson, approximately 50 per cent of the patients showed inversion of the T wave in significant leads during convalescence. Two patients showing inversion of the T wave died suddenly. In the patients who recovered, the inverted T wave returned to normal as early as seven weeks after the onset of the disease. Cats injected with sublethal doses of diphtheria toxin showed consistently similar T wave alterations, usually within forty-eight hours. These observations support the myocardial theory of circulatory failure in diphtheria. Electrocardiographic studies are of practical value in diphtheria during the period of convalescence, to ascertain both the presence of myocardial involvement and its duration.

Tolerance for Quinine in Exophthalmic Goiter.—Bram found that in 95.6 per cent of patients with exophthalmic goiter, a relative immunity to cinchonism exists; large doses of quinine may be taken with impunity and even with benefit. This is the basis of the quinine diagnostic test for exophthalmic goiter, which is submitted as an asset in the differentiation of this disease from such conditions as effort syndrome, early tuberculosis, neurasthenia and other conditions commonly confused with exophthalmic goiter. In the form of the hydrobromide or the sulphate, quinine is a valuable constituent of the therapeutic armamentarium of the internist who treats patients with exophthalmic goiter, and should be given in the average case in much larger doses than has been the custom.

Jerusalem Artichokes in Diabetes Diet.—The metabolism of a patient with diabetes mellitus in whose diet Jerusalem artichokes furnished one-half the carbohydrates was studied by Carpenter and Root for six days with reference to the gaseous exchange, the absorption of food and the composition of the blood and urine. The results show that Jerusalem artichokes furnish carbohydrates which can be absorbed and utilized by a patient with diabetes mellitus.

Disease of Coronary Arteries Without Cardiac Hypertrophy.—In cases of marked disease of the coronary vessels, together with a diseased heart, on gross examination, the heart was found to be unhypertrophied and even small, as revealed at autopsy in the nineteen cases tabulated by Miller and Weiss. In two patients with disease of the coronary arteries, clinical manifestations and roentgen-ray evidence pointed to cardiac enlargement. These hearts were dilated, not hypertrophied.

Effect of Drugs on Gastric Secretion.—Evidence is presented by Altshuler to show that one type of gastric secretion can be converted into a different type of secretion by the use of atropine, epinephrine or pilocarpine. The use of these drugs is suggested as a diagnostic measure in differentiating functional from organic achylia.

Archives of Otolaryngology, Chicago

7: 553-674 (June) 1928

*Roentgen Ray as Aid in Injection of Sphenopalatine Ganglion. O. H. Homme, Los Angeles.—p. 553.
Chronic Disease of Maxillary Sinus: Diagnosis and Surgical Treatment. S. Israel, Houston, Texas.—p. 565.
*Progressive Facial Hemiatrophy. H. G. Wolff, Boston.—p. 580.
New Modification (Pedicle Flap) of Radical Operation on Mastoid. E. L. Ross and W. M. Joyce, Chicago.—p. 583.
Sarcoma of Nasal Bones: Subtotal Removal of Nose and Its Reconstruction. W. T. Coughlin, St. Louis.—p. 588.
Traumatic Loss of Substance of Nostril: Rhinoplasty with Dermo-Epidermic Graft. J. N. Roy, Montreal.—p. 601.
Theoretical Interpretations of Functional Tests. E. P. Fowler, New York.—p. 606.
Drainage of Cisterna Pontis Lateralis in Otogenic Meningitis. A. Lewy, Chicago.—p. 614.
*Ceanothus Americanus: Effect on Coagulation Time of Blood. A. A. S. Giordano and D. L. Wilbur, Philadelphia.—p. 618.
Is Malnutrition Primary or Secondary to Ear Involvement When Two Are Associated? T. H. Odeneal, Beverly, Mass.—p. 623.
Voice in Singing and in Speaking. J. A. Glassburg, New York.—p. 627.
Submucous Resection of Nasal Septum Followed by Complications of Acute Otitis, Mastoiditis and Sinus Thrombosis. K. M. Houser, Philadelphia.—p. 631.
Tracheoscope and Bronchoscopes for Use Without Laryngoscope. M. C. Myerson, New York.—p. 634.
Adjustable Mouthgag Tongue Depressor. E. R. Lewis, Los Angeles.—p. 636.
Chronic Progressive Deafness: Including Otosclerosis and Pathology of Inner Ear. J. K. M. Dickie, Ottawa, Ont.—p. 637.

Roentgen Ray as Aid in Injection of Sphenopalatine Ganglion.—Homme suggests the use of the roentgen ray as an aid in the injection of the sphenopalatine ganglion. In lateral views of the head, the pterygopalatine canal and the sphenopalatine foramen can be distinguished. The region of the sphenopalatine ganglion is more definitely determined by the aid of anteroposterior and lateral roentgenograms taken with a needle through the posterior end of the middle turbinate and with one in the pterygopalatine canal. The region of the

ganglion is more nearly approached by using a slightly curved needle in place of a straight needle in the pterygopalatine canal.

Progressive Facial Hemiatrophy.—Wolff reports the third case of this type. The association of progressive facial hemiatrophy with generalized paresthesia and tenderness of the soft parts and with many signs of autonomic imbalance and depression indicated that the condition was a trophic disorder of central origin of which the facial changes were only a part. Lesions in the vegetative apparatus of the diencephalon or brain stem would account for the conditjon.

Effect of Ceanothus Americanus on Blood Coagulation.—Giordano and Wilbur state that alkaloids of *Ceanothus americanus* definitely reduce the coagulation time in the normal person about 20.5 per cent. The dose of 2 drachms gave a maximal effect; a larger dose did not materially depress the coagulation time to a greater extent. However, one should not expect to prevent or check hemorrhages by the use of this drug alone. It may be used as a possibly helpful measure, but not to the extent of neglecting accepted precautions and, when hemorrhages do occur, of adopting prompt and energetic surgical procedures.

Florida M. Association Journal, Jacksonville

15: 1-50 (July) 1928

Heart Block: Cases. E. W. Bitzer, Tampa.—p. 13.
Surgical Treatment of Duodenal Ulcer. R. Gowdy, Miami.—p. 16.
Use and Abuse of Blood Transfusion. W. W. Kirk, Jacksonville.—p. 21.
Consideration of Some Surgical Lesions of Large Bowel. H. A. Peyton, Jacksonville.—p. 24.
Rumination or Merycism. N. L. Spengler, Tampa.—p. 31.
Conception of Today's Relationship of Dentistry and Medicine. A. F. Douglas, Chattahoochee.—p. 33.
Aneurysm of Thoracic Aorta: Case. J. H. Lucinian, Miami.—p. 35.
Gallbladder Diseases. L. A. Wylie, St. Petersburg.—p. 36.

Illinois Medical Journal, Oak Park

54: 1-84 (July) 1928

Cancer of Larynx. R. C. Lynch, New Orleans,—p. 40.
Treatment of Kidney Infections. D. N. Eisendrath, Chicago.—p. 44.
Radium and Radon in Treatment of Epithelioma of Lip. F. E. Simpson and R. E. Flesher.—p. 48.
Uses and Misuses in Radium. C. W. Hanford, Chicago.—p. 50.
Coordination of Public Health Activities. W. S. Keister, Decatur.—p. 54.
Treatment of Chronic Deafness. H. M. Thometz, Chicago.—p. 59.
Pitfalls in Eye, Ear, Nose and Throat Diagnosis: Difficulties of Bronchoscopy. G. W. Boot, Chicago.—p. 62.
Laryngeal Crisis of Tabes. N. Fox, Chicago.—p. 66.
Relation of Industrial Medicine to Private Practitioner. F. L. Rector, Chicago.—p. 69.
Circumstantial Evidence: What Is Its Value? T. P. Foley, Chicago.—p. 73.
Acute Anterior Poliomyelitis Diagnosis and Manifestations in Adult. P. Bassoe, Chicago.—p. 76.
Chronic Duodenal Ileus. E. M. Miller, Chicago.—p. 80.

Indiana State M. Association Journal, Fort Wayne

21: 277-320 (July) 1928

Low Back Pain. F. C. Kidner, Detroit.—p. 277.
Heart Disease in Relation to Pulmonary Tuberculosis. R. A. Solomon, Indianapolis.—p. 281.
Obstructed Appendix. G. A. Collett, Crawfordsville.—p. 283.
Cancer of Lung: Case. G. C. Johnson and W. R. Hurst, Evansville.—p. 285.
Little Glimpses of Medical Africa. F. E. Wiedemann, Terre Haute.—p. 287.
Physician's Will. F. A. Schack, Fort Wayne.—p. 291.

Johns Hopkins Hospital Bulletin, Baltimore

43: 1-60 (July) 1928

Sphygmograph Using Carbon Grain Microphone and Strong Galvanometer. R. H. Turner, Baltimore.—p. 1.
Method for Measuring Velocity of Pulse Wave in Which Helium Glow Lamps Are Used as Markers. R. H. Turner, Baltimore.—p. 14.
*Streptococcic Puerperal Infection with Unusual Lesions. J. W. Harris and J. H. Brown, Baltimore.—p. 26.
Parturition in Monkey, Pithecus (Macacus) Rhesus, Gestation Period and Other Phenomena Incident to Pregnancy and Labor. C. G. Hartman, Baltimore.—p. 33.

Streptococcic Puerperal Infection with Unusual Symptoms.—The three cases of streptococcic puerperal infection reported by Harris and Brown were: (1) a case of miliary abscesses of the uterine wall treated by hysterectomy, in which the streptococcus was recovered from the uterine cavity; (2) a case of postabortal, bilateral thrombophlebitis treated by ligation of the affected veins, in which identical streptococci were recovered from the uterine cavity and blood stream, and (3) a case of puerperal endometritis, extensive encapsulated peritonitis and embolic pneumonia in which the same streptococcus was recovered from the uterus and from the peritoneal and pulmonary exudates. The streptococci found in these three patients were of three different strains, as shown by the differences in fermentation reactions. According to Holman's classification, the organism from the first case was *Streptococcus infrequens* and that from the last two cases was *Streptococcus pyogenes.* Further differentiated by Brown's classification, the first two streptococci were atypical members of the infrequens and pyogenes groups while the last was a typical *Streptococcus pyogenes.*

Kansas Medical Society Journal, Topeka

29: 211-246 (July) 1928

Trypanosomiasis: Case. J. A. Dillon, Larned.—p. 211.
Foreign Body (Glass Bottle) in Rectum. R. G. Ball, Kansas City.—p. 218.

Michigan State M. Society Journal, Grand Rapids

27: 437-502 (July) 1928

Diagnosis of Gastro-Intestinal Disease from Good History. W. C. Alvarez, Rochester, Minn.—p. 437.
Two Types of Toxemia in Toxic Adenoma. E. P. Sloan, Bloomington, Ill.—p. 440.
High Forceps: When to Do Cesarean Section for Pelvic Indication. F. S. Kellogg, Boston.—p. 443.
Liver Function. C. W. Heald and W. B. Lewis, Battle Creek.—p. 448.
Thoracic Surgery. J. Alexander, Ann Arbor.—p. 451.
Thymophysin in Obstetrics. L. W. Haynes, Detroit.—p. 456.
Multiple Sebaceous Cysts of Scrotum: Case. H. Cooke, Rochester, Minn.—p. 458.
Surgical Treatment of Hyperthyroidism. C. D. Brooks, Detroit.—p. 459.
Surgical Procedures in Carcinoma of Large Bowel. F. W. Rankin, Rochester, Minn.—p. 465.
Difficulties Sometimes Encountered in Differentiating Syphilis from Tuberculous Meningitis. J. C. Moloney, Detroit.—p. 468.
Postencephalitic Syndrome. R. G. Janes, Pontiac.—p. 470.
Peritonsillar Abscess in Infants: Case. H. Bauguess, Detroit.—p. 472.
Focal Infection. J. G. R. Manwaring, Flint.—p. 473.

New England J. Medicine, Boston

199: 59-106 (July 12) 1928

*Spinal Anesthesia for Upper and Lower Abdominal Operations. L. F. Sise, Boston.—p. 59.
Procaine Hydrochloride in Reduction of Fractures. H. F. Day, Boston, and W. S. Levenson, Roxbury, Mass.—p. 66.
*Local Anesthesia in First and Second Stage Labor. D. Rose, Boston.—p. 68.
Healing and Healed Vegetative (Subacute Bacterial) Endocarditis. S. Weiss and C. P. Rhoads, Boston.—p. 70.
Ketogenic Diet in Treatment of Epilepsy. W. G. Lennox, Boston.—p. 74.
Effect of High Voltage, Short Wavelengths, Roentgen-Ray Exposure on Circulating Blood Cells. R. P. Stetson, Boston.—p. 76.
Rotarolateral Curvature of Spine Secondary to Hypertrophy of Heart. H. G. Lee, Boston.—p. 78.
Problem of Sterility. J. Rock, Boston.—p. 79.
*Familial Incidence of Exophthalmic Goiter. H. Morrison, Boston.—p. 85.

Spinal Anesthesia for Abdominal Operations.—Sise states that spinal anesthesia is the anesthesia of choice for abdominal operations, because it combines intense relaxation with freedom from injurious after-effects as does no other form of anesthesia. A technic for this form of anesthesia is described in some detail, together with suggestions for the treatment of circulatory depression.

Local Anesthesia in Labor.—Rose reports on the use of local anesthesia for the first and second stages of labor. This is based on the anatomic and physiologic factors concerned in the production of pain. During the primary stage of labor, pain is referred to the abdomen by contractions of the uterus. When the sensory nerve endings in the skin are paralyzed with procaine, in those areas to which pain is referred, it is possible for labor to continue without the pain reflex. The only pain then experienced is in the back and this is primarily due to direct action on the sacral plexus and often is only slight. Secondarily, this back pain is associated with dilatation of the cervix. When the cervix has become fully dilated and taken up, i. e., the second stage of labor, pain is experienced in the perineum and vulva. This is due to direct action of the presenting part on the pelvic floor, namely, the levators, the perineum and the hymeneal ring. Infiltration of these parts insures complete absence of pain in this stage.

Familial Incidence of Exophthalmic Goiter.—Morrison calls attention to the occurrence of six cases of exophthalmic goiter in one family group and two in each of two other families. In the first group two sisters, three children of one of these, and the child of a third sister had the disease. In the other two families there were two sisters in each.

New Jersey M. Society Journal, Orange

25: 439-504 (July) 1928

Modern Medicine and Public Education. R. A. Kilduffe, Atlantic City.—p. 439.
Cardiac Child: Program. H. B. Silver, Newark.—p. 442.
Social Aspect of Heart Disease in Childhood. L. B. Rubinow, Newark.—p. 445.
Tuberculosis in Infancy and Childhood Compared with that in Adults. W. M. Bartlett, Bernardsville.—p. 448.
Protein Susceptibility in Infancy and Childhood. B. G. Sherman, Morristown.—p. 452.
Problems in Nutrition of Infants. F. I. Krauss, Chatham.—p. 454.
Habits in Children. A. Gordon, Philadelphia.—p. 456.
Hypophyseal Gland. D. L. Poe, Newark.—p. 460.
Nasal Aspects of Gynecology. D. A. Curtis, Hackensack.—p. 472.
Bilateral Acute Pleural Empyema. D. W. Scanlan, Atlantic City.—p. 488.
Diphtheria Immunization in Preschool Children: Plea to Profession. H. L. Fuerstman, Newark.—p. 490.

Oklahoma State M. Association Journal, Muskogee

21: 181-208 (July) 1928

Eye Lesions from Oral Sepsis. J. R. Walker, Enid.—p. 181.
Intra-Ocular Foreign Bodies. E. S. Ferguson, Oklahoma City.—p. 183.
Tularemia: Three Cases from Oklahoma. H. C. Ricks and H. Wollack, Oklahoma City.—p. 185.
Mercurochrome Treatment of Purulent Meningitis. W. E. Dixon, Oklahoma City.—p. 189.
Focal Infection from Paranasal Sinuses. A. S. Piper, Enid.—p. 191.
Injuries of Eye. L. C. Kuyrkendall, McAlester.—p. 194.
Chronic Appendicitis: Case. A. L. Blesh, Oklahoma City.—p. 196.
Congenital Hypertrophic Pyloric Stenosis. A. L. Blesh, Oklahoma City.—p. 198.

Physical Therapeutics, Baltimore

46: 327-372 (July) 1928

Physical Therapy in Treatment, Teaching and Research. J. Grober, Jena, Germany.—p. 327.
Physiologic Reactions to Radiant Energy. F. T. Woodbury, New York.—p. 332.
Modification of Collings Pancysto-Urethroscope. V. C. Pedersen, New York.—p. 339.
New Abdominal Electrode. W. Wolf, New York.—p. 342.
Dilated Aorta with Cardiovascular Syndrome: Bronchiectasis Following Empyema. W. B. Snow, New York.—p. 345.
Carcinoma of Thyroid: Metastases: Radium and Roentgen Ray. D. E. Ehrlich, New York.—p. 352.
Diathermy for Clinical Conditions. J. Hunter, Toronto.—p. 359.

Public Health Journal, Toronto

19: 301-350 (July) 1928

Population Study (Nova Scotia). A. C. Jost, Halifax, N. S.—p. 301.
Physician and Industrial Disease. V. E. Henderson, Toronto.—p. 309.
Undulant (Malta) Fever: Case. W. P. Warner, Welland, Ont.—p. 314.
Montreal Antituberculosis and General Health League. J. A. Baudouin, Montreal.—p. 317.

Public Health Reports, Washington, D. C.

43: 1713-1783 (July 6) 1928

Study of Vision of School Children. G. A. Kempf, B. L. Jarman and S. D. Collins, Washington, D. C.—p. 1713.

Radiology, St. Paul

11: 91-180 (Aug.) 1928

*Routine Cholecystography. W. W. Watkins and H. P. Mills, Phoenix, Ariz.—p. 91.
*Results of Oral Method in Cholecystography. J. Aspray, Spokane, Wash.—p. 99.
Roentgen Rays in Science and Industry. W. P. Davey, State College, Pa.—p. 101.
Diagnostic Use of Intra-Uterine Iodized Oil Injection Combined with Roentgen Rays, as Compared to Peruterine Carbon Dioxide Insufflation. I. C. Rubin, New York.—p. 115.
Pneumothorax: Radiologic Study. L. R. Sante, St. Louis.—p. 126.
*Roentgen-Ray Cardiograph. S. Katzman, New York.—p. 134.
Treatment of Malignant Diseases of Female Sexual Organs: As Practiced at Gynecologic Institute of Zurich University. W. Fürst, Zurich, Switzerland.—p. 141.

Routine Cholecystography.—In 320 of 625 cases reported on by Watkins and Mills, positive interpretations of gallbladder disease were made. The dye was administered orally in all the cases.

Results of Oral Method in Cholecystography.—Aspray commends this method. His results have been so satisfactory that he seldom uses the intravenous method. In 312 of 498 cases pathologic changes were found. Vomiting occurred in only thirty-six cases.

Roentgen-Ray Cardiograph.—Katzman describes an instrument that will make separate roentgen-ray exposures of the different phases of motion of the human heart through slits in a metal plate opaque to roentgen rays. A single roentgen-ray film is made to register the motion in different parts of the heart during one or more cardiac cycles. By moving the photographic film underneath the multiple slit plate, a series of exposures are produced on the film by the impinging roentgen rays through each slit. The name roentgen-ray cardiograph is applied to this instrument.

Southern Medical Journal, Birmingham, Ala.

21: 505-592 (July) 1928

Management of Uterine Malignancies at Radium Institute of University of Paris. G. T. Pack, Tuscaloosa, Ala.—p. 505.
Results in Roentgent-Ray Treatment of Skin Cancer. W. S. Lawrence, Memphis, Tenn.—p. 514.
Maternal Treatment After Delivery. C. R. Hannah, Dallas, Texas.—p. 517.
Legg's Disease in Its Late Stage: Four Cases. S. D. David, Houston, Texas.—p. 522.
Fractures About Orbit: Forty-Seven Cases. W. D. Gill, Washington, D. C.—p. 527.
Pathology of Certain Virus Diseases. E. W. Goodpasture, Nashville, Tenn.—p. 535.
Surgical Treatment of Diseases and Injuries of Blood Vessels. J. L. Campbell, Atlanta, Ga.—p. 539.
Present-Day Possibilities of Immunization Against Infectious Diseases. F. W. Schultz, Minneapolis.—p. 542.
Big Books and Much Teaching. S. R. Roberts, Atlanta, Ga.—p. 548.
Acquisition of Specific Hypersensitiveness: Study Based on 1,000 Asthma and Hay-Fever Cases. R. M. Balyeat, Oklahoma City.—p. 554.
Significance of Negative Skin Tests in Pollen Hay-Fever and Asthma in Infants and Young Children: Treatment. I. S. Kahn, San Antonio, Texas.—p. 559.
Hemianopsia and Brain Tumors. M. G. Pearce, Houston, Texas.—p. 562.
Thrombo-Angiitis Obliterans. T. G. Orr, Kansas City, Mo.—p. 565.
Clinical Significance of Optic Neuritis and Papilledema. A. O. Pfingst, Louisville, Ky.—p. 568.
Pediatric Clinics in Alabama: Extension Course. A. A. Weech, Baltimore.—p. 575.
Results of Injection of Gasserian Ganglion with Alcohol for Cure of Trifacial Neuralgia of Type Known as Tic Douloureux. R. C. Bunting, Memphis, Tenn.—p. 580.
Congenital Stenosis of Conus Arteriosus with Ectasia of Pulmonary Artery and Bacterial Endocarditis of Pulmonary Valve. L. W. Nabers, Rochester, Minn.—p. 582.
Fractures of Os Calcis: Case. L. F. Robinson, Fort Lauderdale, Fla.—p. 583.
Polycythemia Vera. J. A. McIntosh, Memphis, Tenn.—p. 584.

Tennessee State M. Association Journal, Nashville

21: 79-122 (July) 1928

Fibroid Tumors Complicating Pregnancy. L. L. Sheddan, Knoxville.—p. 79.
Clinical Aspects of Jaundice. C. Collier, Memphis.—p. 86.
Danger of Iodine in Routine Treatment of Goiter Except as Preparation for Operation. W. D. Haggard and W. O. Floyd, Nashville.—p. 90.

West Virginia Medical Journal, Charleston

24: 313-368 (July) 1928

Treatment of Osteomyelitis by Drainage and Rest. H. W. Orr, Lincoln, Neb.—p. 313.
Gallbladder Problem. W. S. Fulton, Wheeling.—p. 318.
Gorgas Idea Applied to Industrial Medicine and Surgery. R. H. Walker, Charleston.—p. 325.
*Antigen for Treatment of Tuberculosis. J. N. Simpson and R. S. Spray, Morgantown.—p. 329.
Secondary Syphilis Complicated by Septic Mouth. A. L. Jones and E. C. Armbrecht, Wheeling.—p. 341.
Intravenous Administration of Sodium Tetraiodophenolphthalein. W. M. Sheppe and W. K. Kalbfleisch, Wheeling.—p. 343.

Antigen for Treatment of Tuberculosis.—Simpson and Spray present a review of the work of Négré and Boquét on the preparation of a methyl alcohol antigen extracted from acetone treated tubercle bacilli, and its use experimentally in animals, as well as in the treatment of various clinical forms of human tuberculosis.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

3: 117-178 (June) 1928

*Anemia in Infancy: Prevalence and Prevention. H. M. M. Mackay.—p. 117.
*Association of Pneumonia and Acute Bright's Disease. L. Findlay.—p. 148.
*Peptic Ulcer in New-Born. J. A. Nixon and A. D. Fraser.—p. 157.
*Duodenal Ulcers in Two Infants of Same Family. J. S. Y. Rogers.—p. 163.
Hypertelorism: Unilateral Case. R. C. Lightwood and W. P. H. Sheldon.—p. 168.

Anemia in Infancy.—Mackay made 2,561 hemoglobin estimations on 541 infants under 2 years of age. There is a typical hemoglobin age curve for the first year of life, showing a double drop with an intermediate rise, the first drop occurring during the first two months of life and the second beginning at 5 months of age. The normal hemoglobin percentage in the blood in infancy from four months upward is at least 80 per cent as estimated by Haldane's hemoglobinometer. The great majority of artificially fed infants and many breast-fed infants in London are anemic. Treatment with the mercury vapor quartz lamp had no influence in preventing or curing this anemia, and no definite relation was shown between seasonal intensity of ultraviolet rays and the incidence of anemia. Outdoor life did not cure it. Anemia develops in infants on many types of diet, and no evidence was here obtained to associate it with vitamin deficiency or with a fat toxemia. This prevalent anemia is due to iron deficiency, possibly with some associated factor, and shows itself from about 4 months of age. It can be prevented or cured by the administration of a soluble iron salt by mouth, which raised the hemoglobin in more than 80 per cent of unselected artificially fed infants. Iron can be satisfactorily and successfully administered in the form of iron and ammonium citrate contained in a dried milk powder, or added in solution to the daily feeds, and it is excellently tolerated by infants. Iron should be given to artificially fed infants from the first months of life, as the hemoglobin can thereby be maintained at a higher level than if it is begun later. Its early administration is particularly important in babies who are small at birth. Artificially fed infants receiving such iron show a striking improvement in general health and resistance to infection, as well as probably better growth, as compared to similar infants without iron treatment. The incidence of diseases of the respiratory tract, as assessed by the author, was in the iron group only half that in the control group.

Association of Pneumonia and Acute Nephritis.—Findlay reports eleven cases in which pneumonia developed during the course of acute nephritis, an incidence of 5 per cent. The interval between the onset of the nephritis and the inception of pneumonia varied between three and fourteen days. The type of pneumonia was lobar in eight cases and bronchopneumonic in three. Three patients died, a mortality rate of 27 per cent. In five additional cases nephritis and pneumonia seemed to be coincident in their development: at least from the histories it was impossible to say whether the renal or the pulmonary mischief was primary. These children ranged in age between 3 and 7 years. Three of the patients made a complete recovery. The renal disturbance was of relatively short duration, all blood and albumin having disappeared from the urine between three and four weeks after its onset. In two cases the illness terminated fatally. In one child empyema and pericarditis were present in addition to the pneumonia. This represents a death rate of 40 per cent, which is excessively high, not only for nephritis but also for pneumonia, especially at that period of life. Both lungs and each lobe of either lung were equally frequently the seat of the pneumonic consolidation.

Peptic Ulcer in New-Born.—Nixon and Fraser report a case of chronic ulcer of the stomach in a child, aged 11 weeks. The child died. On the posterior aspect of the cardiac orifice of the stomach was an ulcer measuring 1.8 by 1.3 cm. situated half within the stomach and half in the esophagus. In a second case the baby was only 9 days old when it died from hemorrhage from the nose and vulva and melena. There was a congenital malformation of the heart. In the duodenum midway between the pylorus and the opening of the common bile duct there was an ulcer measuring 1.6 by 0.8 cm.; the edge of this ulcer was irregular and hemorrhagic but not terraced. Ulceration had penetrated to the subperitoneal layer which formed a clean but slightly bile-stained base. There were no adhesions. Here and there along the small intestine there were small submucosal hemorrhages, but no ulceration. The diagnosis was acute peptic ulcer.

Familial Duodenal Ulcer.—There were three children in the family reported on by Rogers. The first, aged 6, is alive and well. The second child died three years ago at the age of 2 months. At the postmortem examination an acute ulcer was found, 0.5 cm. from the pylorus, on the posterior wall of the duodenum, and another smaller ulcer on the anterior wall. The third child, aged 7 weeks, died from a duodenal ulcer which was the immediate cause of death. A postmortem examination revealed the presence of three ulcers, one, the larger, on the posterior surface of the first part of the duodenum, 0.5 cm. from the pyloric sphincter, and two smaller ones opposite on the anterior surface. The larger ulcer was punched out and had penetrated the muscular coat; the two smaller ulcers involved the mucous membrane alone.

British J. Children's Diseases, London

25: 83-160 (April-June) 1928

Encephalitis Periaxialis Diffusa—Schilder's Encephalitis. C. P. Symonds.—p. 83.
Hemiplegia Associated with Extensive Nevus and Mental Defect (Pathologic Changes). T. Brushfield and W. Wyatt.—p. 96.
Atypical Case of Achondroplasia. E. Pritchard.—p. 101.
Pirquet and Wassermann Reactions in Asthmatic Children. K. H. Baagöe.—p. 107.
Case of Severe Anemia Treated with Liver. R. Hutchison.—p. 110.
Case of Gangrenous Chickenpox Due to B. Diphtheriae. A. Joe.—p. 111.
Anomalous Case of Deafness Successfully Treated by Electrophonide Method. M. Yearsley.—p. 116.

British J. Dermatology and Syphilis, London

40: 279-324 (July) 1928

*Calcium Metabolism in Certain Diseases of Skin. N. Burgess.—p. 279.
*Epidermolysis Bullosa Hereditaria. F. P. Weber.—p. 295.

Calcium Metabolism in Skin Diseases.—The discovery made by Burgess of a normal figure for the total serum calcium in association with a diminished amount of precipitable calcium in many cases, and a diminution of both total and precipitable calcium in a few cases of certain skin diseases, confirms the work of Vines and Grove. Cases of urticaria, especially those showing marked dermographism, prurigo of the Besnier type, total alopecia areata, light sensitization of the adult type, and eczema, in the vast majority of instances present a marked diminution of precipitable serum calcium. Cases of acro-asphyxia and erythema pernio can be divided into two groups—those showing a greatly diminished precipitable calcium, and those in which the serum calcium is normal. Cases of urticaria, prurigo, eczema and those cases of acro-asphyxia and chilblains with a low serum calcium were considerably improved by treatment with calcium and parathyroid. Only one case of psoriasis showed a diminished precipitable serum calcium. Two patients with seborrheic dermatitis out of five had a lowered serum calcium, accompanied by much secondary infection. A slight diminution of the serum calcium was found in one case of erythema multiforme, while normal figures were obtained in a case of Darier's disease and a case of acrodermatitis continua. Of the cases investigated, those in which the endocrine glands and sympathetic nervous system are believed to be primarily at fault showed a diminution of the precipitable calcium in the serum, while in most cases the total calcium was found to be normal. It is believed that the dysfunction of the endocrine glands leads to an alteration in the chemical or physical state of the calcium in the serum, so that there is a diminution in the amount of calcium which can be used by the tissues. This is believed to cause an increased irritability of the sympathetic nervous system which leads to the formation of skin lesions.

Hereditary Epidermolysis Bullosa.—Of nineteen members of four generations of one family, ten were affected with this disease. The nature of the cutaneous disorder in the family seems not generally to have been recognized. Negative Wassermann and Meinicke reactions were obtained by Weber in his case.

Presse Médicale, Paris

36: 753-768 (June 16) 1928

*Hereditary Transmission of Filtrable Virus of Tuberculosis. F. Arloing and A. Dufourt.—p. 753.
Value of Cholecystography. R. A. Gutmann.—p. 756.

Hereditary Transmission of Filtrable Virus of Tuberculosis.—Arloing and Dufourt inoculated guinea-pigs at birth with the filtrable virus of tuberculosis. Some of the animals showed no effects from these inoculations, but others reacted with marked retardation of growth. Occasionally the inoculation resulted in emaciation and cachexia of the young guinea-pigs, which died at the age of 1 or 2 months without true tuberculous lesions but with tubercle bacilli in the lymph glands. On the basis of these experiments the authors propose the following clinical grouping of new-born infants who inherit the filtrable virus: 1. Those who present the syndrome of progressive hypothrepsia or athrepsia sometimes terminating in death. 2. Those in whom the only symptom is abnormal growth. In all probability the cause of this retarded development is an organic intoxication due to the presence either of the attenuated ultravirus or of the bacilli. 3. Those who have inherited a filtrable virus which remains entirely latent and produces no disturbances in development. The authors believe that the new facts concerning filtrable viruses will render necessary a complete revision of the subject of the hereditary transmission of tuberculosis.

Schweizerische medizinische Wochenschrift, Basel

58: 569-596 (June 9) 1928

Resection of Carcinoma of Descending Colon. Enderlen.—p. 569.
Indications for Albee-de Quervain Osteopathy in Tuberculous Spondylitis. G. Dardel.—p. 571.
Contusions and Distorsions of Shoulder: Late Results. M. Dubois.—p. 575.
*Familial Occurrence of Spondylitis Deformans. W. Fischer.—p. 579.
Two Cases of Chorio-Epithelioma in the Man. R. Jeanneret.—p. 585.

Familial Occurrence of Spondylitis Deformans.—Fischer reports the cases of two brothers, aged 34 and 39, respectively, with spondylitis deformans, whose father, aged 70, while having normal spinal motility, has had rheumatic pains in the sacral region and shoulders and arms for the past year or so. In the case of the younger brother, rheumatic pains first appeared about ten years ago while he was living in French Guiana. There is now rigidity in the dorsal and lumbar segments of the spine and exaggerated kyphosis in the dorsal segment. At the same time the older brother, who had not left Europe, began to assume a bent posture because of stiffening of the dorsal spine. The stiffness later extended to the hip joints and cervical spine. A third brother, aged 38, had occasional pains in the right thigh three years ago. After a fall on the buttocks in the winter of 1927, he had pain in both hips, radiating to the knee, worse on the right side and on movement after rest; there was difficulty in raising the right leg. These disturbances disappeared in the summer. This brother is now normal.

Policlinico, Rome

35: 891-938 (May 14) 1928. General Practice Section

*Operation for Megacolon. A. Caucci.—p. 891.
Plasmochin in Treatment of Malaria in Children. F. Schiassi and G. Merighi.—p. 893.

Operation for Megacolon.—Caucci describes his operation done on a girl, aged 9. Believing that total colectomy is too severe an operation for a frail person, he performed a partial colectomy, or, in short, sigmoidectomy, combined with pelvic cecocolostomy. An outline of the various steps of the operation follows: First stage: umbilicopubic laparotomy, externalization of the sigmoid flexure, appendectomy and excision of the base of the cecum, end-to-side anastomosis of the cecum with the lower portion of the pelvic colon (Trendelenburg position), section of the mesosigmoid and suture of externalized loop, suture, by layers, of the abdominal wall, resection of the externalized sigmoid loop and ligation of the stumps, divulsion of the anus to eliminate presence of pathologic conditions, rectal retention sound, insertion of two Paul tubes to the stumps of the colon. Second stage (after from six to eight weeks): Closing of the colostomy. The patient, who has been seen several times during the past three years, has a daily, painless spontaneous bowel movement and her general health is good.

Archiv für klinische Chirurgie, Berlin

150: 551-723 (June 21) 1928

*Injuries of Pericardium: Rare Case. W. Spitzmüller.—p. 551.
Antethoracic Esophagoplasty According to Roux-Herzen-Lexer Method. H. Wiedemann.—p. 563.
*Esophagotomy for Perforation of Esophagus. A. Seiffert.—p. 569.
Reasons for Failure of Braun's Method of Splanchnic Anesthesia. X. J. Polissadowa.—p. 577.
Hydronephrosis in Infants and Children. C. Müller.—p. 589.
Histology of Sesamoid Bone of First Metatarsal Following Fracture. C. Crump.—p. 617.
Pyelovenous Backflow. K. A. Heinrich and F. Leeser.—p. 624.
Rupture of Abdominal Wall Following Laparatomy. K. von Gusnar.—p. 636.
Diagnosis of Tuberculosis by Means of Culture of Tubercle Bacillus. A. Dimtza.—p. 646.
*Injury of Thymus from Fibrous Mediastinitis. H. Fischer.—p. 656.
*Use of Parchment to Replace Defects of Dura. A. Oberniedermayr.—p. 667.
Indications for Operation in Tuberculosis of Seminal Vesicles. H. Riese.—p. 676.
Relations Between Osteoporosis and Arteriosclerotic Changes of Nutrient Blood Vessels in Upper End of Femur. W. Hallermann.—p. 683.
Radical Treatment of Carcinoma of Rectum. H. Dieterich.—p. 691.
Surgical Treatment of Pruritus Ani and of Circumscribed Chronic Eczema. E. Fischer.—p. 716.

Injuries of Pericardium.—Spitzmüller relates the case of a man who fell from a height of about 45 feet. He was conscious when picked up and complained of severe pain in the chest and abdomen. He appeared to have sustained several fractures of the pelvis and there was fluid in one knee. The pulse beat was small and rapid. The heart was normal in every way. Toward evening he began to vomit; his temperature rose to 38.5 C.; pulse increased to 170. The abdomen in the epigastric region was hard. The patient seemed to be in a state of shock. A laparotomy was performed but no cause for the symptoms was found. There was very little free fluid and no exudate. Breathing continued difficult and painful. The patient now also complained of heart pains radiating to the shoulder. Finally, on the third day, symptoms of pneumonia were manifest. They increased in severity rapidly. The patient died that night. At the autopsy a rent, 2.5 cm. long, was found in the apex of the pericardial sac—with no fluid in the sac itself. The neighboring organs were not injured by the fall.

Esophagotomy for Treatment of Recent Traumatic Perforation of Esophagus with Involvement of Mediastinum.—A man hurriedly swallowed a piece of bread. It lodged in his esophagus and blocked it completely. Attempts made by several physicians to push the obstructing bread down into the stomach failed to give the patient the ability to swallow either liquids or solids until one physician forcibly pushed a sound down into the esophagus. Immediately afterward the patient was able to swallow water. Then he became distressed. Finally, he was referred to Seiffert. On examination with the esophagoscope, he found a perforation in the posterior wall of the esophagus which communicated with a cavity in the mediastinum containing much fluid and coagulated blood. Seiffert slit the wall of the esophagus, the whole length of the mediastinal cavity and passed a rubber tube down into the stomach, the upper end protruding from the nose. All went well. The tube was removed on the eighth day and the patient was discharged on the twentieth day entirely well.

Clinical and Pathologic Study of Injury of Thymus from Fibrous Mediastinitis.—Fischer cites three cases to prove that adherent mediastinopericarditis may, by injury to the thymus, cause a dysfunction of that gland and indirectly, by related sequence, of other endocrine glands, and thus be responsible for errors in development, both physical and mental.

Use of Parchment to Replace Defects of Dura.—Oberniedermayr used a very thin, transparent, soft, pliable parchment, sterilized by being placed in boiling water for five minutes, in his animal experiments. Healing was perfect and hernia cerebri did not occur. He says that it is encapsulated by newly formed fibrous tissue. He has not given the method a clinical trial.

Deutsche medizinische Wochenschrift, Berlin

54: 945-984 (June 8) 1928. Partial Index

*Teaching and Learning in Surgery. H. von Haberer.—p. 945. C'td.
*Winter Clothing: Action of Light and Air on Skin. E. Friedberger.—p. 947.
Liver Extract in Treatment of Pernicious Anemia. E. Laqueur and A. P. W. Münch.—p. 951.
Intravenous Injection of Colloidal Metallic Silver in Treatment of Multiple Sclerosis. K. Ohnsorge and S. Fischer.—p. 952.

Aschner's Medulla Oblongata Pressure Phenomenon. W. Wegner and Pumplun.—p. 953.
Infectious Spondylitis. S. A. Pokrowsky.—p. 955.
Irradiated Ergosterol in Rickets. J. Gehrt.—p. 956.
Iontophoresis and Medical Treatment of Lens Opacity. K. Steindorff. —p. 959.
Geologic Factors in Etiology of Malignant Granulomas. I. Litteck.—p. 960.
*Use of Epinephrine in Examination of Gastro-Entero-Anastomosis. N. A. Podkaminsky.—p. 962.
Pharmacotherapy of Bronchial Asthma. E. Schott.—p. 963.
*Psychotherapy of Bronchial Asthma. J. A. Schultz.—p. 964.
Allergen-Free Chambers in Diagnosis and Treatment of Allergic Diseases. W. Storm van Leeuwen.—p. 965.

Teaching and Learning in Surgery.—Von Haberer insists that the much-talked-of intuition consists mainly of experience and memory and can be acquired only at the bedside. The term minor surgery as applied to treating purulent inflammations of the hand, etc., is, he asserts, wholly wrong, as more ability and knowledge are required to treat such lesions than are needed to remove an inflamed appendix at an early stage. He lays stress on the importance of instruction in treating injuries and fractures and in the application of bandages.

Winter Clothing: Action of Light and Air on Skin.—Friedberger compares the winter clothing of men and women, greatly to the advantage of the latter. A man, aged 33, height 170 cm., weight 65 Kg., is contrasted with a woman, aged 30, height 165 cm., weight 60 Kg. The weight of the man's indoor clothing was 3,229 Gm.; of the woman's, 741 Gm., the temperature under the clothing was 31 and 27 C., respectively; the relative humidity under the clothing, 70 and 55 per cent, respectively. The man, he points out, is living in a tropical climate, while the woman is enjoying the dry, cool atmosphere of the Alps. With heated houses, protection against the cold of winter should be obtained by outer garments, to be removed when indoors, rather than by thicker underwear. He is surprised that our present knowledge of the action of light rays on the skin and entire organism has had no influence on men's clothing. An occasional sun bath in summer, often harmful because excessive, is not what is needed, but rather the continuous access of the light rays to the skin of the entire body. Experiments with light-sensitive paper showed that with modern woman's dress, loose, unlined and of thin or porous material, this is largely obtained, while no light rays whatever penetrate the man's closely woven and lined coat and vest.

Use of Epinephrine in Examination of Gastro-Entero-Anastomosis.—Epinephrine relaxes the stomach wall and closes the pylorus. It can thus be used to differentiate spasm from organic obstruction as the cause of stenosis of a gastro-enterostomy opening. It is also useful in testing the functional capacity of the pylorus muscle and the degree of irritability of the sympathetic nervous system.

Psychotherapy of Bronchial Asthma.—The asthmatic patient must be taught to control his breathing; expiration, in particular, must be quietly and completely carried out. Singing lessons may be recommended. Hypnotic suggestion should aim at relaxing the thoracic organs and removing congestions of blood from the head. The former may be obtained by suggestions of warmth, the latter by suggestions of cold. After some training the patient can produce the effects by autosuggestion. Putting at rest psychically has been shown in numerous experiments to have a powerful effect on vegetative equilibrium, including carbohydrate metabolism, potassium-calcium equilibrium, blood pressure, water metabolism and the secretions. Psychoanalysis may be necessary for complete cure, since conscious, semiconscious or unconscious conflicts are at the basis of many cases of asthma.

Medizinische Welt, Berlin

2: 897-936 (June 16) 1928. Partial Index

Drug Combinations. S. Loewe.—p. 897.
Liver Extracts. K. Heymann.—p. 899.
*Pathogenesis of Raynaud's Disease. S. Iwai and M. Nin.—p. 900.
Broncho-Esophagoscopic Observations. T. Matsui.—p. 901.
Is "Epidemic Encephalitis" an Alimentary Mass Poisoning? J. Séval. —p. 904.
Influence of Steinach's Vasoligation on Hair. H. Benjamin.—p. 908.
Puerperal Incontinence of Urine. M. Karlin.—p. 910.
Complete Incontinence of Urine Cured by Pyramidalis Fascioplasty. A. Mandelstamm.—p. 912.
Pathogenic Mechanism of Constipation. A. Valenti.—p. 913.
Salts of Arsenic and of Bismuth in Treatment of Surgical Tuberculosis. O. Cignozzi.—p. 917.
Balneotherapy of Gastric Ulcer. J. Lorié.—p. 927.

Pathogenesis of Raynaud's Disease.—By experiments in vitro on the blood of a patient with Raynaud's disease and by experiments directly on this patient, Iwai and Nin became convinced that, in their case at least, the phenomena of the disease were caused by autohemo-agglutinins, rather than by spasmodic contraction of blood vessels on the basis of vasomotor neurosis. Under the influence of cold, the auto-agglutinins agglutinate the erythrocytes and the resultant blood clots stop the circulation in the capillaries.

Münchener medizinische Wochenschrift, Munich

75: 935-980 (June 1) 1928. Partial Index

Induction of Labor in Protracted Gestation. H. Sellheim.—p. 935.
New Types of Cataract Revealed by "Optic Section." A. Vogt.—p. 938.
Lumbar Puncture Versus Suboccipital Puncture in Syphilis. W. Schönfeld.—p. 942.
*Experiences with Scarlet Fever Therapeutic Serum. W. Bröcker.—p. 944.
*Koch-Weeks Bacillus Meningitis in Infants. H. Meyer and R. Steinert. —p. 945.
Surface Increase of Foam-Forming Medicaments. R. Dietzel and U. Pankow.—p. 947.
Parasitic Theory of Cancer. B. Fischer-Wasels.—p. 949.
Diagnosis of Diseases of Descending Aorta. B. Oppler and H. Sielmann. —p. 954.

Experiences with Scarlet Fever Therapeutic Serum.—To determine the value of scarlet fever therapeutic serums, Bröcker injected every other one of 100 scarlet fever patients intramuscularly with 50 cc. of scarlet fever streptococcus serum. The fifty untreated cases were kept under the same external conditions for the purpose of control. On the basis of this investigation, the author concludes that scarlet fever serum is of value in severe cases of scarlet fever. The action occurs early, but is not constant. The serum is of little value in septic complications. In individual cases the action and therapeutic effect are not always definite and apparent. With systematic serum treatment the general course of the fever is less severe and fewer and less serious complications develop.

Koch-Weeks Bacillus Meningitis in Infants.—Meyer and Steinert describe three cases of meningitis occurring in infants and caused by the Koch-Weeks bacillus. In each of the cases a febrile period lasting several days preceded the meningitic symptoms, which appeared suddenly. During the entire duration of the disease, from four to five weeks, more or less complete unconsciousness was present and later a progressively increasing tendency to spasticity was noted. The cerebrospinal fluid was cloudy and rich in pus cells; on long standing a thick fibrin clot formed. Bacteriologic examination of the fresh cerebrospinal fluid sediment from each of the three cases revealed typical Koch-Weeks bacilli in the pus cells. This bacillus closely resembles the influenza bacillus morphologically, but the two kinds of bacilli differ markedly in their cultural characteristics. Since none of these infants were suffering from conjunctivitis, the authors believe that the meningitis resulted from droplet infection of the nasal mucosa and the upper part of the nasal cavity with subsequent extension upward through the air cells of the ethmoid labyrinth and through the lamina cribrosa to the base of the brain. The Koch-Weeks bacillus has been found in the flora of the nose in healthy persons. In one of the cases described, it had passed from the pharynx through the left eustachian tube and had caused an otitis media purulenta which eventuated in meningitis.

75: 981-1022 (June 8) 1928. Partial Index

Respiratory Ferment and Oxidative Decomposition. C. Oppenheimer.—p. 981.
Varieties of Toxicosis of Pregnancy. L. Seitz and H. Eufinger.—p. 986.
Scarlet Fever Problem. H. Mommsen.—p. 990.
Significance of Weight-Height Index. S. Wellisch.—p. 993.
*Tetanus Bacilli in a Case of Pulmonary Gangrene Without Symptoms of Tetanus. W. Voigt.—p. 994.
Intestinal Toxins and Hypertension. C. Mirtl.—p. 994.
*Danger to Parturient Woman from Disease Foci in Mouth of Midwife. K. F. Hoffmann.—p. 995.
Catalase Reaction of Cerebrospinal Fluid. W. Stoeltzner.—p. 996.
*Peculiarities of Apex Beat in Aortic Insufficiency of Syphilitic Origin. J. S. Schwarzmann.—p. 996.
*Results of Parenteral Protein Therapy of Gastric Ulcer. R. Schindler. —p. 997.

Evacuation of Renal and Ureteral Calculi with Aid of Subaqueous Intestinal Bath. Kortzeborn.—p. 998.
*Painless and Bloodless Reposition in Paraphimosis. K. Deichsel.—p. 1001.
Endo's Fuchsin Nutrient Medium Modified So That It Will Keep. J. von Darányi.—p. 1001.

Tetanus Bacilli in a Case of Pulmonary Gangrene Without Symptoms of Tetanus.—At the necropsy reported by Voigt, the pathologico-anatomic observations consisted of bilateral lobar pneumonia with suppurative breaking down and gangrene on the left side, fibrinohemorrhagic pleuritis, also on the left side, and acute tracheobronchitis. There were no injuries to the skin and no foreign body in the lungs. The patient had had no symptoms of tetanus. Nevertheless, bacilli, demonstrated by animal inoculation to be tetanus bacilli, were present in very large numbers in the gangrenous cavity. Vegetative as well as spore-bearing forms were present.

Danger to Parturient Woman from Disease Foci in Mouth of Midwife.—Hoffmann recommends that midwives, when attending the parturient or puerperal woman, cover the mouth and nose with gauze, as does the surgeon, or pay the most careful attention to oral hygiene, to prevent droplet infection.

Peculiarities of Apex Beat in Aortic Insufficiency of Syphilitic Origin.—Schwarzmann points out that in endocarditic insufficiency of the aortic valves, an upward thrusting, high and resistant apex beat is encountered, whereas in syphilitic aortic insufficiency the apex beat, while resistant, is low and may be felt deep down. The upward thrust against the palpating finger is slow and appears flattened. The apex beat is not, however, diffused, as in endocarditic aortic insufficiency, but is discernible only over a strictly limited area.

Results of Parenteral Protein Therapy of Gastric Ulcer.—Schindler reports twenty-four complete cures in a series of thirty-nine selected patients with gastric ulcer treated by intravenous injection of a protein preparation, combined with moderately strict diet. Ten further patients have only occasional slight symptoms. All but two of the patients were treated ambulantly. There were ten cases of recurrence; in seven of these a repetition of the treatment brought prompt healing.

Painless and Bloodless Reposition in Paraphimosis.—For cases uncomplicated by infection, Deichsel proceeds as follows: A rubber band, from 50 to 75 cm. long and from 1 to 1.5 cm. wide, such as may be cut from an Esmarch bandage, is wound tightly around the swollen glans penis. After from fifteen to twenty minutes the swelling will have subsided and reposition can be easily and painlessly effected.

Wiener klinische Wochenschrift, Vienna

41: 797-832 (June 7) 1928. Partial Index

Influence of Age and Sex on Allergy in Tuberculosis. C. Pirquet.—p. 797.
Pathologic Changes in Animals Inoculated with B C G. H. Chiari.—p. 798.
Immunity to Tuberculosis and Calmette's Protective Inoculation with B C G. E. Nobel.—p. 798.
Statistics on Immunity of the New-Born with B C G. S. Rosenfeld.—p. 800.
Fate of Children in Families with Open Tuberculosis. A. Götzl.—p. 804.
*"Inclusion Diseases" of the Skin. B. Lipschütz.—p. 806.
Specific-Nonspecific Treatment of Early Syphilis. E. Finger.—p. 808.
C'cn.
Influence of Pneumoperitoneum on Leukocytes in Peripheral Blood. R. Boller.—p. 810.
Theory of Urine Formation. K. Buinewitsch.—p. 812.
Application Anesthesia, Without Injection, for Tonsillectomies. G. Alexander.—p. 813.

"Inclusion Diseases" of the Skin.—The diseases in which cell inclusions are found are termed by Lipschütz "inclusion diseases" (Einschlusskrankheiten). These inclusions are now generally considered to be defense reactions of the cell, the actual disease excitants being minute corpuscles known as elementary bodies or Strongyloplasmata, some of which take part in the formation of the inclusion. The inclusions have diagnostic significance, which in some cases, as in differentiating light forms of smallpox from chickenpox, can be of practical importance. If, in examination of the excised efflorescence, the inclusions are found to lie exclusively in the nucleus, the evidence is against smallpox and in favor of chickenpox; large numbers of inclusions in the plasma (particularly in the "vesicular cheeks" of the efflorescence) with some nuclear inclusions, speak with certainty against chickenpox and for smallpox.

Zentralblatt für Chirurgie, Leipzig

55: 1537-1600 (June 23) 1928

Cancer Problem. G. Perthes.—p. 1538.
*Actinomycosis as Late Result of War Injuries. O. Boyksen.—p. 1542.
*Appendicitis and Measles. A. Fischer.—p. 1546.
Congenital Atresia of Small Intestine. E. Birgfeld.—p. 1548.
Hallux Valgus: Etiology, Surgical Treatment. A. Balog.—p. 1553.

Actinomycosis as Late Result of War Injuries.—Boyksen relates two cases in which soldiers who had sustained wounds of the abdomen and pelvic bones, respectively, were later found to have an actinomycosis infestation as a result of having been bedded on straw. One of the patients died of the actinomycosis, which affected the entire ilium. The actinomyces in both cases undoubtedly entered by the wounds.

Appendicitis and Measles.—Fischer recognizes a definite relationship between measles and appendicitis on the basis of an inflammation of all mucous membranes including that of the intestines. In one of his three cases the initial symptoms were those of appendicitis—and a slight rhinitis. The appendix was removed. Its mucosa was much swollen. The following day a typical measles eruption appeared. In the second case, a pneumonia developed on the second day of the onset of the measles, and on the fourth day vomiting and intestinal colic, with pain on pressure in the ileocecal region and some tympanites—but without leukocytosis—which were regarded as abdominal symptoms of a right sided pneumonia. The increasing severity of the abdominal symptoms led the author to perform a laparotomy. He found a gangrenous appendix and considerable seropurulent pelvic exudate. The third patient had had vomiting, colic and painful muscle rigidity and scaphoid abdomen for two days, without leukocytosis. He also had a rhinitis and a mild bronchitis. On the morning of the third day a gangrenous appendix was removed. On the fourth day after the operation a typical attack of measles began.

Acta Chirurgica Scandinavica, Stockholm

63: 311-478 (June 25) 1928

Development of Surgery in Sweden. G. Petrén.—p. 311.
Trauma of Liver Without Rupture of Capsule. R. Brandberg.—p. 321.
*Nonparasitic Cysts of Spleen. R. Brandberg.—p. 346. In English.
Examination of Urine for Function of Pancreas: Wohlgemuth's Diastase Reaction. T. Skoog.—p. 374.
Diagnosis of Cancer of Colon: Value of Roentgen-Ray Examination. G. Petrén.—p. 432. In English.
*Method of Reduction and Ambulatory Plaster-Case Treatment of Fractures of Leg. R. Ivarsson.—p. 441. In English.
"Chisel" Fracture of Capitulum Radii: Difficulty of Diagnosis Even with Roentgen Ray. S. Junghagen.—p. 475.

Nonparasitic Cysts of Spleen.—Brandberg reports two cases of multiple lymphangiomas of the spleen in which a splenectomy was done. In one of the cases, about one year later, cysts also appeared in the liver and led to the death of the patient. The author is of the opinion that so-called polycystic degeneration is always caused by true tumor formation. In a case of pseudocyst of the spleen, splenectomy was performed with good result. A fourth case was one of a papillary pseudomucinous ovarian cystoma metastasizing to the spleen, twenty-five years after extirpation of the ovarian cysts and the splenic tumor. A splenectomy was done and the patient is now entirely well.

Method of Reduction and Ambulatory Plaster-Case Treatment of Fracture of Leg.—Immediately after admission Ivarsson reduces the fracture provisionally and the leg is made comfortable in a Volkmann's splint, and kept there for about eight days. Definite reduction is then carried out by the aid of a special footplate and extension table which permits of an exceedingly high degree of extension; the leg is then put in a complete plaster case, the plaster being accurately molded round malleoli and tibial condyles. A few days later the patient leaves his bed and is allowed to walk on his fractured leg, being subsequently treated as an outpatient. After six weeks the plaster foot is removed, so as to enable the ankle-joint to become freely mobile. Eight weeks after its application the plaster case is also removed and it is only exceptionally that some after-treatment is given. Ivarsson has treated twenty-seven cases by this method. All cases of uncomplicated fractures of the shaft have united without any subsequent invalidity. Patients resumed their work after an average of 15.7 weeks. Anatomically as well as functionally fully satisfactory results were obtained in all the cases.